PB82-197286

Draft Environmental Impact Statement Wastewater Treatment Facilities, Jefferson Parish (West Bank), Louisiana

(U.S.) Environmental Protection Agency
Dallas, TX

Feb 82

U.S. Department of Commerce
National Technical Information Service
NTIS

United States
Environmental Protection
Agency

Region 6
1201 Elm Street
Dallas, TX 75270

EPA 906/9-82-001
February 1982

Water

PB82-197286

EPA

Environmental Impact Statement

Draft

Wastewater Treatment Facilities Jefferson Parish (West Bank) Louisiana

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16. ABSTRACT

Jefferson Parish has considered alternative methods for making improvements to the West Bank wastewater conveyance and treatment system. A set of final alternatives has been analyzed which would provide adequate wastewater management through the year 2005. All of the final alternatives involve abandonment of existing treatment plants and the construction of new treatment plant(s). The parish has not yet selected a preferred plan from among the final alternatives. When this occurs, EPA will further evaluate approval and funding of the preferred plan as well as other alternatives (including providing no funding). Many issues bear inEPA's decision, including impacts to water quality and socioeconomic conditions.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

March 12, 1982

TO ALL INTERESTED AGENCIES, OFFICIALS, PUBLIC GROUPS AND INDIVIDUALS:

Enclosed is a copy of the Draft Environmental Impact Statement (EIS) on the awarding of additional grants under Section 201 of the Clean Water Act for construction of wastewater treatment facilities for Jefferson Parish, West Bank, Louisiana. This document has been prepared in compliance with the National Environmental Policy Act of 1969 and implementing regulations.

EPA will hold a public hearing on the Draft EIS at 7:30 p.m., Thursday, April 22, 1982 in the New Gretna Courthouse, Council Chamber - Second Floor, Derbigny and Second Street, Gretna, Louisiana. I request that individuals and representatives of groups wishing to make a statement at the hearing submit a written copy of their proposed statement at the time of the hearing, if possible.

If changes required in the Draft EIS are minor, the Final EIS will incorporate the Draft EIS by reference and include only: (1) a revised summary, (2) revisions necessary to the Draft EIS as a result of public comment, and (3) EPA's response to comments made on the Draft EIS. Therefore, the Draft EIS should be retained for possible use in conjunction with the Final EIS. The Final EIS will be sent only to those who request a copy or who make substantive comments on the Draft EIS.

A draft wastewater treatment facilities plan for the West Bank of Jefferson Parish is currently under preparation and should be available for public review in June 1982. Jefferson Parish officials will hold a public hearing on the draft facilities plan thirty (30) days after its release. A report entitled "West Bank 201 Public Hearing Document," which summarizes the facilities planning already accomplished, may be reviewed along with the Draft EIS at the following locations:

Marrero Branch Public Library
626 Avenue A
Marrero, Louisiana

Lafitte Branch Public Library
Lafitte Volunteer Building
Main Road
Lafitte, Louisiana

Terrytown Branch Public Library
680 Heritage Avenue
Gretna, Louisiana

Westwego Branch Public Library
222 Fourth Street
Westwego, Louisiana

Written comments or inquiries regarding this EIS should be addressed to Mr. Clinton B. Spotts, Regional EIS Coordinator, at the above address by the date stamped on the cover sheet following this letter.

Sincerely,

Frances E. Phillips
Dick Whittington, P.E.
Regional Administrator

Enclosure

DRAFT ENVIRONMENTAL IMPACT STATEMENT

WASTEWATER TREATMENT FACILITIES
JEFFERSON PARISH (WEST BANK), LOUISIANA

Responsible Agency: U.S. Environmental Protection Agency, Region VI

Action Being Considered: Possible awarding of construction funds for wastewater treatment facilities for Jefferson Parish (West Bank), Louisiana.

Contact for Further Information:
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U.S. Environmental Protection Agency, Region VI
1201 Elm Street
Dallas, Texas 75270
Telephone: Commercial (214) 767-2716
FTS 729-2716

Abstract:

Jefferson Parish has considered alternative methods for making improvements to the West Bank wastewater conveyance and treatment system. A set of final alternatives has been analyzed which would provide adequate wastewater management through the year 2005. All of the final alternatives involve abandonment of existing treatment plants and the construction of new treatment plant(s). The parish has not yet selected a preferred plan from among the final alternatives. When this occurs, EPA will further evaluate approval and funding of the preferred plan as well as other alternatives (including providing no funding). Many issues bear in EPA's decision, including impacts to water quality and socioeconomic conditions.

Date Comments Due:

Responsible Official: Frances E. Phillips
Dick Whittington, P.E.
Regional Administrator

1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

Title II of the Clean Water Act (CWA) authorizes the Environmental Protection Agency (EPA) to administer federal funds for the construction of treatment works. EPA provides financial assistance to grantees through the Construction Grants Program. The goal of this program and other provisions of the Clean Water Act is to restore and maintain the chemical, physical and biological integrity of the waters of the United States. In the past, EPA grants were normally given in three steps or phases: 1) facilities planning, 2) detailed design, and 3) actual construction. However, Public Law No. 97-117 amends Title II of the CWA as of December 29, 1981. The amendments basically abolish the three-step grant process and provide for one-step construction grants only. The Jefferson Parish government applied for and received a grant to prepare a facilities plan for improvements to the West Bank wastewater conveyance/collection and treatment system. This plan is to provide a framework for wastewater management decisions through the year 2005. Funding of 75 per cent of the planning costs is provided by EPA under grant No. C-220592-01-0.

The planning area (Figure 1-1) includes all of the West Bank of the parish with the exception of the cities of Gretna and Westwego, Grand Isle and contiguous areas. The planning area is bounded on the north by the Mississippi River, on the west by St. Charles and Lafourche parishes, on the east by Orleans and Plaquemines parishes, and on the south by the Gulf of Mexico.

A separate wastewater facilities planning effort for the Lafitte area was completed by Hamilton, Meyer and Associates, Inc. (1978) under EPA grant No. C-220536-01-0. The planning area included south-central Jefferson Parish, predominantly within Ward 6, with the Town of Jean Lafitte being the only incorporated area within the planning area boundaries. The Lafitte planning area was generally bordered on the north by the Millaudon Canal; on the south by the end of Louisiana Highway 45; on the east by Bayou des Familles, the Jefferson-Plaquemines Parish line, and Bayou Latour; and on the west by Bayou Bardeaux, Lake Salvador, and Bayou Rigolettes.

The Lafitte facilities plan identified the transport of Lafitte area wastewater to a hypothetical, regional treatment facility serving the entire West

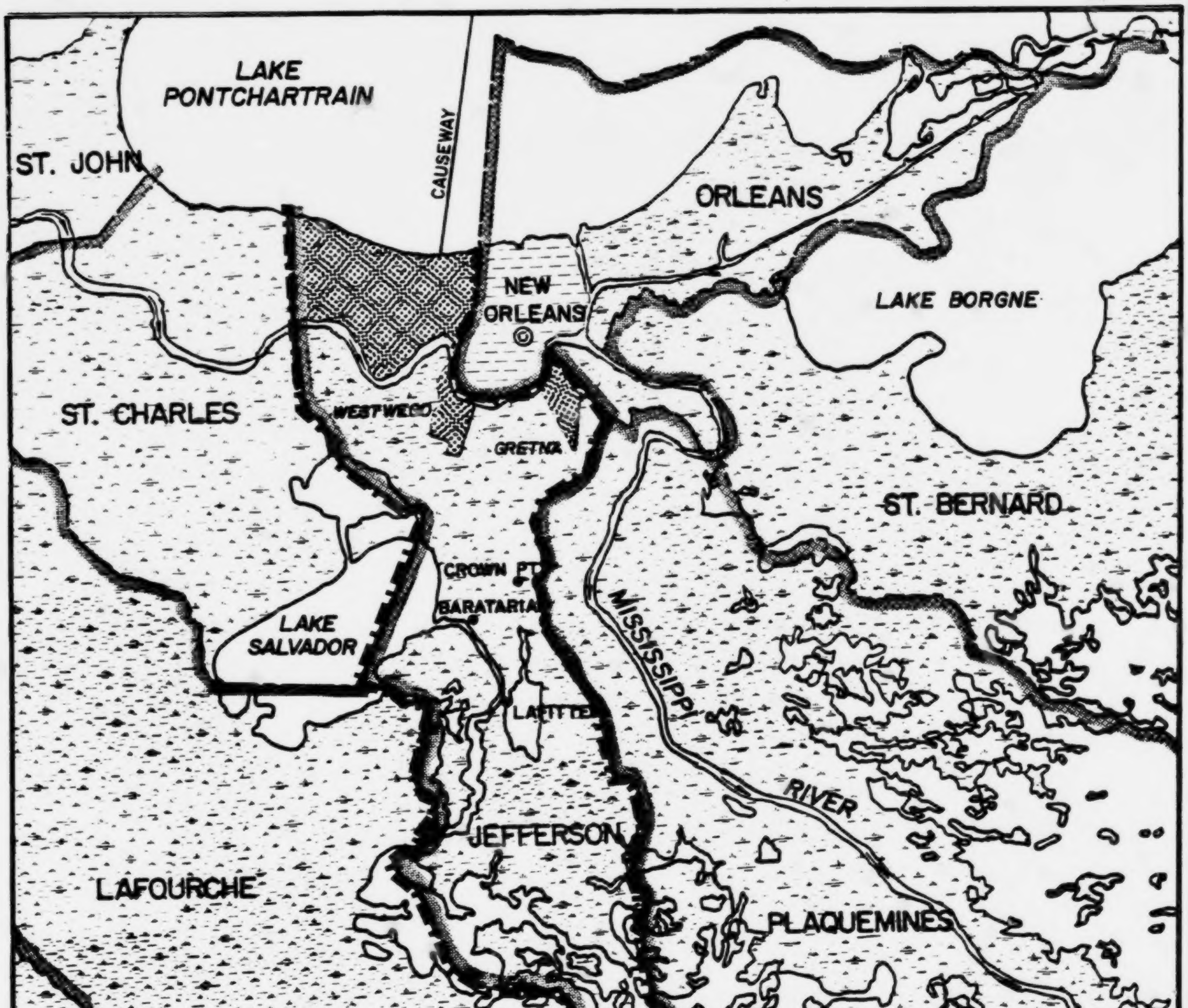
LAKE PONTCHARTRAIN
ST. JOHN
CAUSEWAY
ORLEANS
NEW ORLEANS
LAKE BORGNE
ST. CHARLES
WESTWEGO
GRETNA
ST. BERNARD
CROWN PT
BARATARIA
LAKE SALVADOR
LAFITTE
MISSISSIPPI RIVER
JEFFERSON
LAFOURCHE
PLAQUEMINES
BARATARIA BAY
GULF OF MEXICO
GRAND ISLE
N
10
0
10
SCALE IN MILES
▨ AREAS NOT INCLUDED IN PLANNING AREA

FIGURE I-1

PLANNING AREA

JEFFERSON PARISH (WEST BANK)
201 FACILITIES PLAN EIS

VTN louisiana, Inc.

Bank as the most cost-effective alternative. At the time that the Lafitte area study was completed, facilities planning for the West Bank had not begun. The EPA decided, therefore, that decisions on how to proceed to solve Lafitte's wastewater needs would await completion of the West Bank facilities plan.

1.2 EXISTING WASTEWATER MANAGEMENT IN THE PLANNING AREA

Presently, there are 14 sewage treatment facilities of various process types serving the planning area. The facilities lie within the consolidated West Bank Sewerage District, which is under the operational control of the Department of Sewerage within the Department of Public Utilities. The treatment plants discharge effluent to a series of canals that were designed to remove stormwater from population centers. On the West Bank, most of these waterways discharge into backwaters of Barataria Bay. During low flow conditions, the source of flow in the canals is primarily wastewater discharged into them. Laboratory analyses of plant effluent samples indicated that several plants are not meeting secondary treatment standards. In addition, half of the facilities are currently handling hydraulic loads in excess of their design capacities.

The physical condition of most of the plants is generally fair to poor. Most are approaching 20 years in operation and are in need of major repairs and renovation. Studies made as part of the West Bank facilities plan concluded that the existing treatment plants are inadequate for properly treating current wastewater flows. Future increased loading coupled with anticipated stringent effluent standards will further stress the systems. In addition, the existing sewage conveyance/collection system has numerous deficiencies and is subjected to excessive infiltration.

At the present time, there is no sanitary sewer system within the Lafitte area. A number of camps, used primarily for recreational purposes, discharge raw sewerage into the watercourse to which they are adjacent. These camps are located in the northern portion of the Lafitte planning area and number about 60. Septic tanks from homes along Bayou Barataria discharge either directly into the bayou or into drainage ditches which eventually drain to the bayou. Septic tank problems in the area are attributed to poor soil percolation, undersized drain fields, the high water table, clogged drain fields, or poor construction techniques. There is also a small percentage of homes along Bayou Barataria which have no septic tanks and are discharging raw sewage directly into the bayou.

1.3 EPA'S DECISION TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT

The National Environmental Policy Act of 1969 (NEPA) requires that federal agencies prepare an environmental impact statement (EIS) for all federal actions which significantly affect the quality of the human environment. The EPA is required to evaluate each wastewater facilities plan and determine if an EIS is necessary. If the need for an EIS is determined early in the facilities planning process, EPA policy (Program Requirement Memorandum 75-31) allows for the joint preparation of the EIS by EPA and a grant applicant. This procedure, termed "piggybacking," was developed to reduce the total time required to resolve environmental issues while satisfying all statutory requirements.

Due to the potentially significant environmental impacts associated with the awarding of funds for construction of wastewater treatment facilities for the West Bank, EPA determined that the preparation of an EIS was necessary. EPA and Jefferson Parish entered into an agreement to prepare the EIS by the "piggyback" method and, subsequently, Notice of Intent to prepare the EIS was issued by EPA on February 25, 1980.

Due to the geographical closeness of the West Bank and Lafitte planning areas, EPA and the parish elected to describe the environmental impacts of both projects in a single EIS.

1.4 ISSUES ADDRESSED IN THE EIS

Major concerns identified and evaluated in the EIS include:

- † PROJECT ALTERNATIVES - All feasible project alternatives, including the No Action alternative were evaluated for environmental soundness.
- † PRIMARY AND SECONDARY IMPACTS - All primary and secondary impacts, both beneficial and adverse, that could result from conveyance system or treatment plant construction were evaluated. Primary consideration was given to water quality, air quality, cultural resources, and biological resources, with special attention focused on wetlands and endangered species.

- † SOCIOECONOMIC EFFECT OF CONSTRUCTION/OPERATION - Impacts of this project on the economic stability of the citizens, both directly and indirectly, were analyzed.

Also, as a result of the public participation program for this project, additional issues were considered in the preparation of the EIS and a few are identified below:

- † Relationships between treatment levels and effluent discharge points,
- † Use of advanced waste treatment for treatment facilities discharging to the Mississippi River,
- † The number and location of new wastewater treatment facilities, and
- † Potential conflict with the proposed new Mississippi River bridge crossing in Jefferson Parish.

1.5 PROJECT ALTERNATIVES

The Clean Water Act and NEPA require that a range of wastewater management alternatives be evaluated to ensure that the most cost-effective and environmentally-sound project is built. The following alternatives were evaluated by the Applicant.

1.5.1 No Action Alternative

Under this alternative, use of the existing wastewater treatment facilities would continue without any attempt to upgrade treatment levels or expand facilities. EPA regulations require that a 20-year planning period be considered in a wastewater facilities plan. If the current population growth trend in the planning area continues over the next 20 years the existing sewage treatment system, at its present size, will be grossly overloaded. At best each facility will treat flow at or above its design capacity, and will either totally bypass additional flow or inadequately treat it prior to discharge. Under the No Action alternative, increasing wasteloads from existing treatment plants would result in further degradation of watercourses in the Barataria Basin. Consequently, this alternative is not acceptable. At a minimum some actions must be taken to resolve the existing problems and bring Jefferson Parish into compliance with effluent standards.

In the Lafitte area continuing development would increase the amount of improperly treated wastewater discharged from septic tanks to the surrounding bayous. As a result, the water quality in the bayous and drainage system can be expected to continue to deteriorate. Failure to implement improvements may affect botanical and zoological elements of the bayous due to increasingly poor water quality. Of particular concern are the oyster growing waters in the area. Therefore, the No Action alternative is not feasible for the Lafitte area.

1.5.2 Considerations in the Development of Preliminary Alternatives

The number of possible waste collection and treatment alternatives for the West Bank is very large. The starting point for analyzing these alternatives was the existing system, which brings wastewater to a limited number of specific locations where treatment facilities now exist. While use of the existing facilities may or may not be included in the selected plan, wastewater flows are presently concentrated at these points and, thus, they were logical sites for treatment or transfer facilities.

There are other jurisdictional and physical barriers which tend to subdivide the planning area. For purposes of evaluating alternatives, the Facilities Plan Engineer subdivided the planning area into three zones:

- † ZONE I - includes all of the area bounded by St. Charles Parish on the west, the City of Westwego on the east, the Mississippi River on the north, and the Lake Cataouatche levee on the south.
- † ZONE II - includes the area bounded by the Mississippi River on the north, the Harvey Canal on the east, and the hurricane protection levee and City of Westwego on the west.
- † ZONE III - includes the area bounded by the Harvey Canal on the west, Plaquemines Parish on the southeast, Orleans Parish in the northeast, and the Mississippi River on the north; the City of Gretna is excluded.

The Facilities Plan Engineer investigated a number of alternative conveyance systems including rehabilitation of the existing system. A number of secondary and advanced treatment schemes, including land treatment, were also examined. The use of aquaculture also received consideration.

Effluent discharge points for the planning area are either to the Mississippi River or to the parish canal system (i.e., Barataria Basin). Generalized discharge alternatives considered were as follows:

† secondary treatment and river discharge,
† advanced treatment and canal discharge,
† land treatment and river discharge,
† land treatment and canal discharge,
† aquatic treatment and canal dischage, and
† advanced treatment and river discharge.

The impacts of commercial and industrial wastewater flows, sludge management options, and wastewater reuse were also considered.

1.5.3 Preliminary Alternative Screening

When the considerations described above are taken into account, a large number of wastewater conveyance, treatment, and discharge alternatives become possible for the planning area. In order to screen the numerous available alternatives to a workable number, the Facilities Plan Engineer utilized a computer model which provided a cost-effectiveness analysis of new or upgraded wastewater treatment facilities. Application of the model and other engineering analyses resulted in the selection of 20 preliminary alternatives.

The 20 preliminary alternatives were then subjected to further engineering and environmental review. Each of the preliminary alternatives was analyzed with respect to a number of environmental criteria, including impacts to surface water, groundwater, soils, geology, topography, air quality, terrestrial and aquatic ecosystems, land use, socioeconomic conditions, aesthetics, and community attitudes. Noise and traffic impacts due to construction and electrical energy usage were also examined. Within each topic area the alternatives were grouped according to their expected environmental impacts. A rating system was then developed which assigned a positive, negative, or neutral value to each alternative grouping in a particular impact area.

Generally, those alternatives which contained land treatment or aquatic treatment concepts did not rank highly due to the potentially adverse land use impacts, particularly the large amounts of land required for treatment. The remaining highest ranking alternatives contained one, two, or three new conventional wastewater treatment plants with (at most) one plant in each of the three service areas (zones). A set of eight alternatives was retained for further study.

1.5.4 Description of Final Alternatives

Following the screening of preliminary alternatives, the sites that were originally envisioned as locations for new wastewater treatment plants were reevaluated. Through a detailed site selection process, six final sites were selected on the basis of land availability, surrounding land use, potential land use of the actual site, and other environmental and engineering considerations.

The preliminary alternatives which had been retained for further study were reassessed taking into account the new sites. This process resulted in a set of ten final alternatives that encompassed the concepts of one, two, or three new treatment plants to serve the West Bank. The No Action alternative was retained as a final alternative for comparative purposes. The most cost-effective aquatic treatment alternative from among the preliminary alternatives was also retained as a final alternative to ensure that land treatment and innovative concepts were fully evaluated. The twelve final alternatives are described in Table 1-1.

1.5.5 Evaluation of Final Alternatives

The environmental impacts of the final alternatives are described in detail in Chapter 6. Table 1-2 presents a summary comparison of the final alternatives.

With the exception of the No Action alternative, all of the final alternatives involve some degree of abandonment of the existing treatment plants. The plants would be replaced by pumping stations to convey wastewater from the present plants to new plants for treatment and discharge. The new force mains required would be similar in extent for each of the alternatives. These lines would be constructed in roadways and existing rights-of-way. Environmental impacts associated with construction of these lines would include dust and noise generation and traffic disruption. Where treatment plant sites would be in remote areas, such as Hero Cut-off or Churchill Farms, force main construction would disrupt wetlands. However, the conveyance system impacts of the final alternatives would be similar in their magnitude.

Alternatives involving secondary treatment and discharge to the Mississippi River would not have adverse impacts on water quality and would not have adverse effects on drinking water supplies. Plans utilizing advanced or aquatic treatment with canal discharge should also have no detrimental effect on area water

Table 1-1

FINAL ALTERNATIVES FOR JEFFERSON PARISH WEST BANK

ALTERNATIVE	DESCRIPTION
A	Regional Secondary Treatment at Cousins North (1 plant)
B	Regional Secondary or Advanced Treatment at Hero Cut-off (1 plant)
C	Regional Secondary Treatment at Timberlane (1 plant)
D	Zone I Aquatic Treatment at Churchill Farms Zones II and III Secondary Treatment at Cousins North (1 aquatic site, 1 plant)
E	Zone I Secondary Treatment at U.S. 90 Zones II and III Secondary or Advanced Treatment at Hero Cut-off (2 plants)
F	Zone I Secondary Treatment at U.S. 90 Zones II and III Secondary Treatment at Cousins North (2 plants)
G	Zone I Secondary Treatment at U.S. 90 Zones II and III Secondary Treatment at Timberlane (2 plants)
H	Regional Secondary Treatment at U.S. 90 (1 plant)
I	Zones I and II Secondary Treatment at U.S. 90 Zone III Secondary Treatment at Timberlane (2 plants)
J	Zone I Secondary Treatment at Kelvin Tract and Secondary Treatment at U.S. 90 Zones II and III Secondary Treatment at Cousins North (3 plants)
K	Zone I Secondary Treatment at U.S. 90 Zone II Secondary Treatment at Cousins North Zone III Secondary Treatment at Timberlane (3 plants)
L	No Action

Table 1-2

ENVIRONMENTAL COMPARISON OF FINAL ALTERNATIVES

Alternatives and Related Sites	Environmental Factors														
	GEOLOGY	TOPOGRAPHY	SOILS	SURFACE WATER	PUBLIC WATER SUPPLY	FLOOD HAZARD AREAS	GROUNDWATER	AIR QUALITY	NOISE QUALITY	BIOLOGICAL RESOURCES	WETLANDS	CULTURAL RESOURCES	SOCIOECONOMIC FACTORS	ENERGY AND RESOURCES	LAND USE
A COUSINS NORTH	No impacts anticipated	No impacts anticipated	Construction problems anticipated for collection system, regional plant site has poor soil conditions	Overall improvement in area water quality due to upgrading of existing treatment plants	No adverse impacts anticipated due to spatial separation of outfall and water intakes, degree of treatment provided, and river flow	Cousins North site is in 100-year floodplain and has a flood elevation of 1.5 feet (12/26/75)	No impacts anticipated. Groundwater is not used for potable water supply	Fugitive dust and equipment exhaust emissions anticipated. Impacts will be minor and mitigation measures available	Construction activities will produce noise impacts short term in duration; mitigating measures available	Adverse impact due to minor disruption of terrestrial habitat	Cousins North site is not a wetland area	No impacts anticipated.	The final alternatives were evaluated with respect to a number of socioeconomic factors. The impacts of the final alternatives are described in more detail below. **Population**: Growth will be due to economic and social urbanization patterns and planning efforts, not a direct result of project alternatives. **Recreation**: Alternatives could have indirect impact on parks & recreation facilities; possible adverse impact on Jean Lafitte Park from alternatives D and J. **Employment and Income Characteristics**: Possible adverse impacts to area's fishing industry from alternatives D and J; generally beneficial impacts due to other alternatives. **Education**: No direct effect due to any of the alternatives; possible indirect effect due to population growth. **Public Service and Utilities**: No adverse direct or indirect effects due to project alternatives. **Public Health and Safety**: Alternatives will improve existing conditions and be beneficial for public health; sewage back-ups in homes should be eliminated. **Transportation**: Temporary traffic disruption during construction for all site options; possible conflict at U.S. 90 site with proposed new Mississippi River bridge crossing.	Annual electricity requirement is 10.[illegible] x 10^6 KWh/yr. Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	In order to compare the site-specific effects from each alternative, a set of evaluation criteria was developed and included: • Quantity of land needed at each site • Total amount of land for each alternative • Compatibility with existing uses • Compatibility with planned uses • Community attitudes • Aesthetic considerations This analysis allowed the alternatives to be grouped according to level of adverse site-specific impacts: Least Adverse - [illegible] Some Adverse - [illegible] Most Adverse - [illegible]
B HERO CUT OFF	No impacts anticipated	No impacts anticipated	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	Hero Cut off site is in 100-year floodplain and has a flood elevation of 5.5 feet (7/9/76)	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above.	Same as Alternative A above.	Hero Cut off site is a wetland area.	No impacts anticipated		Annual electricity requirement is 22.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
C TIMBERLANE	No impacts anticipated	No impacts anticipated	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	Timberlane site is in 100-year floodplain and has a flood elevation level of 1.5 feet (10/31/77)	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above.	Same as Alternative A above.	Timberlane site is not a wetland area.	No impacts anticipated		Annual electricity requirement is 26.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
D CHURCHILL FARMS AND COUSINS NORTH	No impacts anticipated	No impacts anticipated	Same as Alternative A above	Same as Alternative A above	Same as Alternative A for Cousins North only. Churchill Farms would discharge to Barataria Basin	Cousins North site is in 100-year floodplain and has a flood elevation level of 1.5 feet (12/26/75); Churchill Farms site is in 100-year floodplain and has a flood elevation level of 4.5 feet (10/13/78). Possible adverse impacts on adjacent areas	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above.	Cousins North site is not a wetland area; Churchill Farms site has both wetland and non-wetland areas	No impacts anticipated		Annual electricity requirement is 21.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
E U.S. 90 AND HERO CUT OFF	No impacts anticipated	No impacts anticipated	Same as A above, except soil conditions at U.S. 90 site are somewhat better	Same as Alternative A above	Same as Alternative A above	U.S. 90 site not in 100-year floodplain; Hero Cut off site is in 100-year floodplain and has a flood elevation level of 5.5 feet (7/9/76)	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above.	U.S. 90 site is not a wetland area; Hero Cut off site is a wetland area	No impacts anticipated.		Annual electricity requirement is 22.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
F U.S. 90 AND COUSINS NORTH	No impacts anticipated	No impacts anticipated	Same as Alternative E above	Same as Alternative A above	Same as Alternative A above	Cousins North site is in 100-year floodplain and has a flood elevation of 1.5 feet (12/26/75); U.S. 90 site is not in 100 year floodplain	Same as Alternative A above.	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above.	U.S. 90 and Cousins North sites are both non-wetland areas	No impacts anticipated		Annual electricity requirement is 10.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
G U.S. 90 AND TIMBERLANE	No impacts anticipated	No impacts anticipated	Same as Alternative E above	Same as Alternative A above	Same as Alternative A above	Timberlane site is in 100-year floodplain and has a flood elevation of 1.5 feet (10/31/77); U.S. 90 site is not in 100 year floodplain	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	U.S. 90 and Timberlane sites are both non-wetland areas	No impacts anticipated		Annual electricity requirement is 10.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
H U.S. 90	No impacts anticipated	No impacts anticipated	Construction problems anticipated for collection system, regional plant site at U.S. 90 has better soil conditions.	Same as Alternative A above	Same as Alternative A above	U.S. 90 site is not in 100 year floodplain	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above.	Same as Alternative A above	U.S. 90 site is not a wetland area	No impacts anticipated		Annual electricity requirement is 29.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
I U.S. 90 AND TIMBERLANE	No impacts anticipated	No impacts anticipated	Same as H above, except soil conditions for [illegible] I/II plant at U.S. 90 site are somewhat better than other sites	Same as Alternative A above	Same as Alternative A above	Same as Alternative G above	Same as Alternative G above	Same as Alternative A above.	Same as Alternative A above	Same as Alternative A above.	U.S. 90 and Timberlane sites are non-wetland areas	No impacts anticipated		Annual electricity requirement is 22.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
J [illegible] TRACT U.S. 90 AND COUSINS NORTH	No impacts anticipated	No impacts anticipated	Same as Alternative H above	Same as Alternative A above	Same as Alternative A above	[illegible] Tract is in 100-year floodplain and has a flood elevation of 4.0 feet (10/31/78); Cousins North site is in 100 year floodplain and has a flood elevation of 1.5 feet (12/26/75); U.S. 90 site is not in 100 year floodplain.	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	[illegible] Tract is wetland except for southwestern corner; Cousins North and U.S. 90 are both non-wetland	No impacts anticipated		Annual electricity requirement is 20.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
K U.S. 90 COUSINS NORTH TIMBERLANE	No impacts anticipated	No impacts anticipated	Same as Alternative E above.	Same as Alternative A above	Same as Alternative A above	Timberlane is in 100 year floodplain and has a flood elevation of 1.5 feet (10/31/77); Cousins North is in 100 year floodplain and has a flood elevation of 1.5 feet (12/26/75); U.S. 90 is not in 100 year floodplain	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above	Same as Alternative A above.	U.S. 90, Cousins North and Timberlane sites are non-wetland areas	No impacts anticipated		Annual electricity requirement is 10.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	
L NO ACTION	No impacts anticipated	No impacts anticipated	No impacts anticipated	Surface water quality will decrease	No impacts anticipated (no discharge to the Mississippi River)	No increased impacts anticipated beyond flooding now experienced at existing plants	No significant impact anticipated	No significant impacts if EPA recommendations are followed	Increased noise levels expected in areas adjacent to existing treatment facilities due to necessary expansion of existing plants for future flows	Continued degradation of Barataria Basin	No impacts anticipated.	No impacts anticipated.	Potential slowing of growth due to need to provide separate sewer facilities as development occurs. The socioeconomic impacts of this alternative described in Ch. 4.	Annual electricity requirement is 9.[illegible] x 10^6 KWh/yr Polymer [illegible] lb/yr Chlorine [illegible] Tons/yr	No impacts anticipated.

quality. However, the possibility of intermittent permit noncompliance is considered greater with an advanced treatment system because of its complexity and the high degree of operational skill that is required. System failure would temporarily affect water quality, particularly in marsh backwaters.

No adverse impacts on geology, groundwater, and cultural resources are expected from any of the alternatives. In the areas of air and sound quality, impacts are expected to be relatively minor and equal for each alternative.

Overall, facility siting is the single most variable environmental factor associated with the final alternatives. The Hero Cut-off and Churchill Farms sites are partly or entirely wetland areas, as is all but the southwest quarter of the Kelvin Tract. The other sites are not wetland areas. All of the potential treatment sites, with the exception of the U.S. 90 site, lie within the 100-year floodplain. Poor soil conditions are exhibited by all of the potential sites, except for the U.S. 90 site which has some of the better soils in the parish for urban use. In terms of land use, the Cousins North and Timberlane sites are closest to adjacent residential areas. Both the Timberlane and Kelvin Tract sites have been used as landfills.

The annual homeowner user charge related to an upgraded West Bank sewerage system has not been determined, but will be for the preferred plan once it is selected by the parish. It is anticipated that this information would be available prior to the public hearing on the wastewater facilities plan. The parish is presently undertaking a water and sewer rate study, the results of which are expected to be input to the development of a West Bank user charge. Development of a user charge at this time is complicated by the uncertainty about the amount of federal funding, if any, that would be available to the parish for construction of needed facilities.

1.5.6 Lafitte Area Alternatives

The separate Lafitte area facilities plan identified several wastewater management alternatives for handling the needs of the area. A cost-effectiveness analysis was performed as part of the plan to determine which system resulted in the minimum total resources costs for the planning period while meeting federal, state, and local requirements. The alternative which proved to be cost-effective involved the construction of pumping stations at three sites and transportation of all Lafitte wastewater to a hypothetical, regional treatment facility that would serve the entire West Bank. However, due to the uncertainty at that time concerning a regional West Bank facility this alternative was discarded.

When cost factors, environmental impacts and public input were considered, the alternative selected as the recommended plan called for the construction of a conveyance system to serve those areas in which population densities warranted such action and the construction of a single advanced wastewater treatment plant to serve the needs of the area. This treatment plant would be located adjacent to Louisiana Highway 45 in the Town of Lafitte, west of the Wagner Bridge. The process recommended was contact stabilization followed by filtration, post aeration and chlorination.

In order to ensure integration of the Lafitte area planning with that of the remaining West Bank, the Lafitte area alternatives were reevaluated as part of this EIS and the West Bank facilities plan. Specifically, the recommended Lafitte study alternative was compared to the option of conveying the Lafitte sewage to a regional West Bank plant. The major beneficial impacts with either option are as follows:

- Water quality of streams in the Lafitte area would be enhanced by the removal of raw and partially treated sewage discharges to these streams and the aesthetic appearance of the streams would also improve;
- Aquatic biota of the area streams would benefit from the removal of septic tank and raw sewage discharges; and
- Existing air quality would be enhanced due to the elimination of raw sewage discharges and septic tank odors; plus the project would eliminate the need for septic tanks and the health and pollution problems associated with overloaded or improperly built septic tank systems.

Adverse impacts associated with the local Lafitte plant option would include the following:

- Project construction would cause some nuisance conditions for area residents in the form of dust and noise generation and traffic disruption;
- Construction of the project would cause the destruction of approximately four acres of forested land;
- There would be temporary disruption of drainage ditches during construction; and
- Vegetation would be disturbed during sewer line construction.

The regional option would have similar adverse impacts such as dust and noise generation, traffic disruption, drainage ditch and vegetation disruption. A smaller amount of forested land would be disturbed since, in lieu of a Lafitte area plant, a pumping station would be built on the same site. The regional option does, however, require the construction of approximately six miles of additional force main interceptor. It is anticipated that the majority of this line would be constructed in the roadway or its shoulder.

1.5.7 Jefferson Parish's Preferred Alternative

At this time the parish has not selected a preferred plan from among the final alternatives. Following the receipt of public input at a public hearing to be held in February 1982, the parish will select a preferred plan.

1.6 ALTERNATIVES AVAILABLE TO EPA

Three options are available to EPA in executing its Construction Grants Program under Section 201 of the Clean Water Act. These options are: to award grant funds for the construction of the grantee's preferred alternative; to award grant funds for a modified or alternative project; or to deny all grant funds for the project.

1.6.1 Award Grants for the Grantee's Preferred Alternative

EPA may award grant funds for the construction of the parish's preferred alternative once it is selected. Under Public Law No. 97-117 ("Muncipal Wastewater Treatment Construction Grant Amendments of 1981"), passed December 29, 1981, grants can be awarded for 75 per cent of the eligible project costs up until October 1, 1984. Thereafter, the federal level of participation will drop to 55 per cent of eligible project costs. Eligible categories of projects include wastewater treatment plants, interceptor sewers, and collection systems. Effective October 1, 1984, however, collector sewers will no longer be eligible except as part of the governor's discretionary fund, which will be between zero and 20 per cent of the state's total allotment. For projects utilizing innovative or alternative technology, grants for 85 per cent of the eligible project costs can be made up until October 1, 1984. After that time, funds will be available for only 75 per cent of eligible project costs.

1.6.2 Award Grants for an Alternate Project

EPA may award grant funds for the construction of an alternative or modified project if it is more cost-effective and has less adverse environmental impacts.

1.6.3 Deny Grant Funds

EPA can deny awarding funds for the construction of any wastewater treatment alternative if it is determined to be ineligible for funding under EPA criteria, if environmental impacts of the project are considered significantly adverse, or if funds are not available. The availability of funds will depend upon the amount of federal money designated for Louisiana and the ranking of the project on the state's priority list.

If EPA should deny awarding additional grants to Jefferson Parish, the existing conditions would worsen. The operation and maintenance problems associated with a number of treatment plants would increase as the existing plants become older. It could be expected that Jefferson Parish would seek other ways to solve these problems since any decision by EPA to deny funds would not remove the parish's responsibility to improve its treatment works.

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3. INTRODUCTION

3.1 BACKGROUND ON APPLICANT AND APPLICATON

Jefferson Parish is located in the southeastern portion of Louisiana immediately south and west of the City of New Orleans. The Mississippi River divides the parish into two sections: the East Bank on the left descending bank of the river, and the West Bank, which is the subject of this Environmental Impact Statement (EIS), on the right descending bank. The planning area (Figure 1-1) includes all of the West Bank with the exception of the cities of Gretna and Westwego, Grand Isle and contiguous areas. The planning area is bounded on the north by the Mississippi River, on the west by St. Charles and Lafourche parishes, on the east by Orleans and Plaquemines parishes, and on the south by the Gulf of Mexico (except for Grand Isle and contiguous areas).

Currently, there are 14 wastewater treatment plants of various process types serving the planning area. The facilities lie within the consolidated West Bank Sewerage District, which is under the operational control of the Jefferson Parish Department of Sewerage within the Department of Public Utilities. As discussed in Chapter 4, some of the existing treatment facilities do not meet secondary treatment standards and/or are being loaded in excess of their design capacity.

Jefferson operates under a form of government consisting of a President and a seven-member Parish Council. The parish government is responsible for wastewater facilities management within the planning area and can apply for grants for wastewater treatment facilities improvement. The parish has applied for and received such a grant to prepare a facilities plan for improvements to the West Bank conveyance and treatment system. The plan is to provide a framework for wastewater management decisions through the year 2005. Funding of 75 per cent of the planning costs is provided by the U.S. Environmental Protection Agency (EPA) under Grant No. C-220592-01-0. Jefferson Parish pays the remainder of the planning costs. URS Company, an engineering firm located in Metairie, Louisiana, is preparing the facilities plan.

A separate wastewater facilities planning effort for the Lafitte area was completed in 1978 under EPA Grant No. C-220536-01-0. The planning area included south-central Jefferson Parish, predominantly within Ward 6. The Town of Jean Lafitte is the only incorporated area within the planning boundaries. The alternatives for the Lafitte area and their environmental impacts have been integrated with those for the West Bank and are discussed in this EIS.

3.2 EPA LEGISLATIVE AUTHORITY AND RESPONSIBILITIES

Parish decisions about water and wastewater management are partly dependent upon the laws, regulations, and grant programs of the federal government, especially the Congressional mandates known as the Clean Water Act and the National Environmental Policy Act.

3.2.1 Clean Water Act (CWA)

In 1972 Congress enacted Public Law 92-500, Amendments to the Federal Water Pollution Act, in order to establish a comprehensive program which would "restore and maintain the chemical, physical and biological integrity of the Nation's waters." Because municipal sewage is one of the major point sources of water pollution in the United States, Title II of the new law provided for an expanded program of federal assistance in the construction of sewage treatment facilities and gave the EPA authority to fund such activities, provided that the state and local governments supply 25 per cent of the necessary financial support. The EPA grants were normally given in three steps or phases: initial planning, detailed planning, and actual construction. Under the law, the initial planning phase is emphasized and must provide a long-range look at a wide range of alternatives for the collection, treatment, and ultimate disposal of waterborne wastes. Actions which promote the reclamation and reuse of wastewater are especially encouraged by the Act, as is cleanup of wastes to the point that no discharge of pollutants occurs from a treatment facility.

Public Law 92-500 requires that a permit be issued for any wastewater discharge to the waters of the United States. The permit system is referred to as the National Pollutant Discharge Elimination System (NPDES). Compliance with the water quality requirements of a wastewater plant's NPDES permit is a mandatory objective of the facilities planning process.

In 1977 Congress passed Public Law 95-217, which revised portions of the 1972 Act. Collectively, the complete amended act is referred to as the Clean Water Act (CWA). Emphasis is placed upon giving planning consideration to innovative technologies for water reuse, energy conservation, and/or complete removal of pollutants. Selection of innovative alternatives is encouraged by the availability of 85 per cent federal participation in facility design and construction, instead of the conventional level of 75 per cent funding.

In 1981 Congress passed Public Law No. 97-117 ("Municipal Wastewater Treatment Construction Grant Amendments of 1981"), which revised portions of the Clean Water Act. These amendments provide for a one-step construction grant funding process, and reduce the current 75 per cent federal participation level for eligible project costs to 55 per cent after October 1, 1984. Funding of innovative and alternative technology in facility construction will be reduced from a current federal level of 85 per cent to 75 per cent after October 1, 1984.

3.2.2 National Environmental Policy Act (NEPA)

NEPA is Public Law 91-190 and was signed in 1969. There are six specific environmental objectives set forth in Section 101(b) of NEPA for federally-funded actions:

- † to fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- † to assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- † to attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable or unintended consequences;
- † to preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
- † to achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- † to enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

NEPA also provides that an EIS be prepared by federal agencies proposing a major action that might significantly affect the quality of the human environment. The EIS must provide information to be used in federal decision-making. Section 102(2)(c) of NEPA requires that the EIS consider:

- † the environmental impact of the proposed action;
- † any adverse environmental effects which cannot be avoided should the proposal be implemented;
- † alternatives to the proposed action;
- † the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and
- † any irreversible and irretrievable commitments of resources which would be involved due to the implementation of the proposed action.

Chapter 4 discusses EPA's decision to prepare an EIS on this project. Based on the most recent regulations regarding EIS preparation, the document concentrates on key issues as determined through an early public "scoping" process, and as further defined during an extensive public participation process. The public participation program normally includes the formation of a Citizens Advisory Committee (CAC) made up of local citizens for the purpose of providing review and advice in the facilities plan and EIS process. Such a committee was formed for this project and its participation is discussed in Chapter 7.

This EIS was prepared under the "piggyback" method as defined in EPA Program Requirements Memorandum, PRM 75-31 (September, 1975). Utilizing this approach, EIS preparation has paralleled the development of the facilities plan, and the wastewater management alternatives have been evaluated to ensure that the plan eventually selected will be both cost-effective and environmentally sound. A summary of the facilities plan will be available prior to the EIS public hearing, with a final facilities plan scheduled for completion approximatley 14 weeks later.

3.3 INVOLVEMENT OF OTHER AGENCIES

The EIS process includes cooperation with all federal and state agencies which have management responsibilities for key environmental resources. Chapter 7 documents the public participation program during EIS preparation and describes the process of coordination and review which applies to the draft EIS. All public comments received on the draft EIS and EPA's responses to these comments will be included in the final EIS.

4. PURPOSE AND NEED

4.1 EXISTING WASTEWATER COLLECTION AND TREATMENT SYSTEMS

4.1.1 Conditions at Existing Treatment Plants

Fourteen treatment plants of various process types currently serve the planning area. Tables 4-1 and 4-2 provide basic information on these facilities.

The Facilities Plan Engineer conducted detailed inspections of the existing treatment facilities during January, February, and July of 1980. The physical condition of most plants was found to be fair to poor. Most of the plants are approaching 20 years in operation and are in need of major repairs and renovations. Improved chlorination systems and backup electrical power supplies are needed at all plants. Other major problems include: inappropriate construction techniques used on some basins causing major leaks; failed structures; clogged underdrains; extensive structural steel corrosion; and inoperative pumps and air compressors.

Sludge handling is a major system-wide problem. There is no regular sludge removal from the smaller extended aeration plants and settled solids can build up and eventually enter the plant effluent. Facilities that do waste sludge do not always provide adequate treatment before disposal. Presently, tank trucks transport undigested and partially digested sludge to a disposal site northwest of the Kelvin Tract where it is discharged. The site is currently in the process of being upgraded and work will be completed by the end of 1982.

The Facilities Plan Engineer concluded that the existing treatment plants are inadequate. Old and undersized units, less than optimum operation, and inadequate manpower make the systems inadequate for properly treating current wastewater flows. Future increased loading, coupled with more stringent effluent standards, will further stress the systems. Laboratory analyses of effluent samples indicated that several plants are not currently meeting secondary treatment standards. In addition, half of the facilities are currently handling hydraulic loads in excess of their design capacities. Detailed descriptions of individual facility problems will be contained in the wastewater facilities plan. Defects found at the individual plants by the Facilities Plan Engineer during site inspections are summarized below.

Table 4-1

EXISTING WASTEWATER TREATMENT PLANTS CHARACTERISTICS

TREATMENT FACILITY	CONSTRUCTION DATE	TYPE OF TREATMENT	SLUDGE TREATMENT/DISPOSAL	FLOW (MGD)		
				DESIGN	PRESENT	NPDES
Terrytown #1	1960	Activated Sludge	Anaerobic Digestion & Sludge Concentrator	0.63	0.63	0.55
Terrytown #2	1961-65	Trickling Filter	Aerobic Digestion & Drying Beds	1.40	1.33	----[1]
Meadowbrook	1969	Activated Sludge	Aerobic Digestion	1.36	1.40	----[1]
Harvey	1960	Trickling Filter	Imhoff Tank & Drying Beds/ Clarifier & Sludge Lagoon	1.00	1.81	0.90
Woodmere	1974	Contact Stabilization	Aerobic Digestion	0.70	0.96	0.40
Floral Haze	1962	Activated Sludge	Draw-off from Clarifier	0.06	0.04	0.05
Marrero	1965	Trickling Filter	Anaerobic Digestion & Drying Beds	4.35	5.38	----[1]
Marrero Oxidation Pond	1965	Oxidation Pond	----------------------	0.34	1.14	0.60
Bayou des Familles	1979	Contact Stabilization	Aerobic Digestion & Drying Beds	0.65	0.13	----[1]
Bridge City	1965	Trickling Filter	Imhoff Tank & Drying Beds	1.04	1.25	----[1]
Avondale North	1964	Activated Sludge	Draw-off from Clarifier	0.15	0.15	0.30
Avondale South	1964	Extended Aeration	Aerobic Digestion & Sludge Lagoon	1.10	0.87	1.65
Floral Acres	1962	Activated Sludge	Draw-off from Clarifier	0.15	0.15	0.15
Live Oak	1971	Activated Sludge	Draw-off from Clarifier	0.15	0.08	0.09

Source: Roy F. Weston, Inc., 1981. ([1]Flow to be monitored and reported as per NPDES permit.)

Table 4-2

EXISTING MUNICIPAL DISCHARGE POINTS
JEFFERSON PARISH WEST BANK FACILITIES PLANNING AREA

PLANT	NPDES PERMIT	RECEIVING STREAM
Avondale North	LA0042005[1]	Main Canal to Bayou Segnette
Avondale South	LA0042013[1]	Main Canal to Bayou Segnette
Bayou des Familles	LA0054453[2]	Bayou des Familles to Bayou Barataria
Bridge City	LA0042064[3]	Bridge City Canal No. 3 to Labranch Canal to Main Canal to Bayou Segnette
Floral Acres	LA0042030[1]	Sauls Canal to Bayou Verret to Lake Cataouatche
Floral Haze	LA0041971[1]	Douglas Canal to Two Mile Canal to Cousins Canal
Harvey	LA0042081	Gardere Canal to Murphy Canal to Bayou Barataria
Live Oak	LA0042021[1]	Sauls Canal to Bayou Verret to Lake Cataouatche
Marrero	LA0042048[3]	Outfall Canal to Millaudon Canal to Bayou Segnette
Marrero Oxidation Pond	LA0041998[1]	Unnamed Canal to Bayou Boeuf to Bayou Segnette
Meadowbrook	LA0042056[3]	Drainage Canal to Bayou Fatma to Bayou Barataria
Terrytown No. 1	LA0041980[1]	Wright Canal to Bayou Fatma to Bayou Barataria
Terrytown No. 2	LA0042072[3]	Terry Parkway Canal to Industry Canal to Oakwood Canal to Bayou Fatma to Bayou Barataria
Woodmere	LA0048828[4]	Unnamed Canal parallel to Cousins Canal to Pipeline Canal to Gulf Intracoastal Waterway to Bayou Barataria

[1] Permit expired at midnight, May 1, 1977.
[2] Permit expires at midnight, June 30, 1984.
[3] Permit expires at midnight, January 24, 1986.
[4] Permit expired at midnight, August 4, 1981.

Source: URS Company, 1980; Jefferson Parish Environmental and Development Control Department, 1981.

Avondale North - aeration basin out of service for structural repairs; aeration basin and clarifier tank construction type prone to leakage; large pipe used as chlorine contact basin and shortcircuiting can occur; no automatic cylinder switchover device on chlorine tanks thus increasing the chance of periodic discharge of non-chlorinated effluent; grass uncut and a fence broken; sludge return pump out of service.

Avondale South - sludge digester used as aeration unit; cable support system for floating surface aeration unit in digester occasionally fails allowing aeration unit to overturn; clarifier construction type prone to leakage; moderate amounts of structural steel corrosion throughout plant; ladders and walkways not satisfactory; no automatic cylinder switchover system for chlorine tanks; grass uncut.

Bayou des Familles - sludge concentration high enough for adequate treatment not being maintained in the aeration or contact basin; all but one of air compressor units out of service and in need of various mechanical repairs.

Bridge City - two trickling filters rotating distribution arms not distributing flow evenly; arms and support arms badly corroded; internal seal on arm system hub a mercury type which is unacceptable under EPA regulations; no automatic switchover on chlorine tanks.

Floral Acres - basin construction type prone to leakage; one side of walkway above aeration basin without a railing; no automatic cyclinder switchover system on chlorine tanks; electrical panel not properly labeled.

Floral Haze - aeration basin out of service for structural repairs; tank construction type prone to leakage; chlorine contact basin baffles deteriorated; moderate amounts of structural steel corrosion; no automatic cyclinder switchover device on chlorine tanks; electrical panel located such that it can easily be vandalized.

Hàrvey - minor amount of steel corrosion; chlorine units not in operation; rotating center shafts of trickling filters have mercury seals which are unacceptable under EPA regulations; no scum removal mechanism on either the Imhoff tanks or the final clarifiers; no automatic switchover system on the chlorine tanks; chlorine tank storage area not properly ventilated.

Live Oak - degree of mixing in the two aeration basins not equal; no automatic switchover system on the chlorine tanks.

Marrero - headworks frequently overloaded which affects performance of the headworks, grit basin and, at times, the primary clarifiers; plant bypassed completely rather often; primary clarifiers had no surface skimming equipment and scum removed manually; rotary shaft on each trickling filter equipped with a mercury seal which is unacceptable under EPA regulations; major flow leakage observed through these seals; significant amount of ponding on each filter as a result of blockage in the medium; final clarifiers lacking skimming equipment; no automatic switchover system on chlorine tanks; filter distribution arms in fair condition with some corrosion; railings needed for grit basin; primary sludge digester out of service because of a major structural failure of the roof.

Marrero Oxidation Pond - facility reported to give off bad odors during the summer months; facility currently being overloaded.

Meadowbrook - one clarifier out of service for mechanical repairs; excess foaming in aeration basin and no spray system available to defoam the tank; extreme turbulence in aerobic digester indicating that one or more of diffuser nozzles not working properly; no automatic switchover on the chlorine cylinders; sludge lagoons had no underdrains; plant fence broken.

Terrytown No. 1 - both primary clarifiers out of service for floor repairs; no automatic switchover on chlorine tanks; chlorination system not in operation.

Terrytown No. 2 - walkways found to be exceptionally slippery; certain electrical circuits overloaded; rotating shafts on trickling filters have mercury type seals which are unacceptable under EPA regulations; during high flows sludge from final clarifiers cannot flow to the influent wet-well, backs up and shortcircuits the clarifier; no automatic switchover system on chlorine tanks; sludge digester out of service due to discharge pumping problem.

Woodmere - one package unit out of service due to sidewall structural failure; chlorination facilities found to be poor; sand filters clogged and effluent flow bypassing both filter and chlorine basins.

4.1.2 NPDES Permits

All but six of the existing treatment plants are operating on expired NPDES discharge permits. Information concerning plant permits is contained in Table 4-1 and Table 4-2. In conjunction with the permits for the Bayou des Familles, Bridge City, Harvey, Marrero, Meadowbrook, and Terrytown No. 2 plants, the EPA has issued Administrative Orders to Jefferson Parish. According to these Administrative Orders, the EPA has determined that the parish cannot comply with the effluent limitations of the permit and the Clean Water Act using the existing treatment works. The parish has been ordered by the EPA to efficiently operate and maintain the existing treatment works so as to discharge effluent which does not exceed interim limitations set forth in the Administrative Orders. The parish must also take steps toward upgrading the treatment works.

4.1.3 Interim Measures Being Taken by the Parish

The parish is undertaking measures which will improve certain of the existing plants in the planning area. These measures will improve performance of the system for the interim period prior to the implementation of a long-range plan which will be set forth in the wastewater facilities plan.

It is anticipated that the Marrero Oxidation Pond will be abandoned within a year with its flows temporarily diverted to the Bayou des Familles plant. After the Marrero plant is upgraded, the Oxidation Pond flows will be removed from the Bayou des Familles plant and diverted to Marrero. It is further anticipated that the Floral Haze plant will be eliminated within 18 months and its flows diverted to the Marrero plant.

A preliminary report has been prepared for the expansion of the Marrero plant. The plant will be expanded to 6.4 mgd, with a design year of 1990. Design is expected to start in the near future and will take approximately six months. Construction activities are expected to last for 20 months.

The Bridge City plant will be expanded to 1.96 mgd, with a design year of 1990. A preliminary report has been prepared and design is expected to start in the near future and will last approximately six months. Construction activities are expected to last 15 months.

Final design is expected to start shortly for the Harvey plant and will last approximately six months. The plant capacity will be expanded to 3.3 mgd, with a design year of 1990. Construction activities are expected to last 15 months. In addition, the capacity of the Live Oak/Floral Acres facilities will be expanded to 0.75 mgd.

4.1.4 Conveyance/Collection Facilities

The sewerage system serving the planning area consists of approximately 1,625,000 linear feet of gravity sewer. These sewers drain to 155 lift stations which ultimately pump all sewage to the 14 treatment plants. In Table 4-3, information is provided on the distribution of the sanitary sewers and lift stations within each treatment plant drainage area. The gravity sewers range from 6 inches to 30 inches in diameter and most are vitrified clay pipe with PVC pipe comprising the remainder.

The initial wastewater conveyance system was installed in Harvey in 1960. Numerous extensions were made over the years as needed and as new subdivisions were developed. Prior to 1977, sewer construction was implemented primarily by real estate developers and was usually of marginal quality. A more complete description of the existing system and its problem areas is contained in the wastewater facilities plan (URS Company, 1981) and in the infiltration/inflow analysis (Roy F. Weston, Inc., 1981).

The 155 lift stations pump sewage from remote locations to the treatment plants. Sewage is pumped from these stations through approximately 231,840 linear feet of force main ranging from 3 inches to 24 inches in diameter. The limited depth to which gravity sewers can be economically excavated has resulted in the proliferation of lift stations. Shallow depths are a constraint due to the extremely high groundwater levels, the numerous canals and ditches traversing the area, and the unstable soils that require extensive sheeting and bracing during excavation. The segmented manner in which the planning area was developed contributed to the number of lift stations.

Various observations were made during recent construction and upgrading of the existing sewer system. Undersized gravity sewers and mismatched force main/gravity sewer connections cause restriction of sewage flows. Manhole and sewer subsidence due to soil conditions often cause pipe breakage, severing of sewers at the manhole connection, and negative slopes in the sewers. Underground obstacles are sometimes encountered during sewer installations or replacement. As a result, it is often necessary to deviate from natural slope patterns, which causes dips and rises in the pipe alignment. A combination of a flowing soil structure and faulty pipe joints or house connections results in undermining of streets, sidewalks and utilities, and subsequent cave-ins. Some storm sewer catch basins have been found directly tied into the sanitary sewer system at various locations. Service lateral connections have been located that are mistakenly tied directly into storm sewers.

Table 4-3

DISTRIBUTION OF LIFT STATIONS AND GRAVITY SEWERS WITHIN TREATMENT PLANT DRAINAGE AREAS

TREATMENT FACILITY	NUMBER OF LIFT STATIONS	GRAVITY SEWER LENGTH (Linear Feet)	GRAVITY SEWER LENGTH (Inch-Miles)	GRAVITY SEWER LENGTH (% Total)
Terrytown #1	2	65,207	113	4.0
Terrytown #2	11	149,708	241	9.2
Meadowbrook	28	151,614	236	9.3
Harvey	23	169,910	289	10.5
Woodmere	10	78,015	118	4.8
Floral Haze	1	4,700	7	0.1
Marrero	46	601,458	972	37.1
Marrero Oxidation Pond	11	124,988	195	7.7
Bayou des Familles	6	33,744	63	2.1
Bridge City	8	93,106	143	5.8
Avondale North	1	17,740	26	1.1
Avondale South	6	101,028	157	6.3
Floral Acres	1	16,797	27	1.0
Live Oak	1	12,320	20	1.0
TOTAL	155	1,620,335	2,607	100.0

Source: URS Company, 1981.

4.1.5 Infiltration/Inflow Analysis

An infiltration/inflow (I/I) analysis survey of the existing sanitary sewer system was conducted (Roy F. Weston, Inc., 1981). Infiltration is defined as water entering a sewer system from the ground through such means as defective pipes, joints, connections or manhole walls. Inflow is the water discharged into a sewer system from sources such as roof leaders, cellars, yard and area drains, manhole covers, storm sewer cross connections and catch basins. I/I can cause treatment plant overloads and disrupt treatment processes.

An I/I analysis is the first phase of a sewer evaluation program which is designed to show that each sewer system discharging into a treatment plant is not, or will not be, subject to excessive I/I. Excessive I/I is that portion of extraneous flow which can be more economically eliminated from a sewer system through rehabilitation rather than by continued conveyance and treatment.

Sewage flows were monitored at 59 lift stations. These sewers are tributary to the 14 treatment plants. In addition, bypassed sewage flows, rainfall and groundwater levels were monitored and related to the measured sewage flows. The data were compiled to determine dry weather sewage flow, return flow, infiltration, and inflow for each plant (Table 4-4). As indicated in the table, the total system-wide dry weather flow is 15.28 mgd as compared to a total design capacity of 12.73 mgd. However, a number of the individual facilities are hydraulically overloaded. The total infiltration in the system amounted to 6.63 mgd, while the inflow was 18.43 million gallons per inch of rainfall (mgi). The I/I analysis found that inflow was excessive while infiltration was not.

4.1.6 Existing Sources of Pollution in the Lafitte Area

There is no sanitary sewer system at present within the Lafitte area, and pollution sources can be grouped into three categories: raw sewerage discharges, septic tank discharges, and industrial waste sources.

About 60 camps, located in the northern portion of the area and used primarily for recreational purposes, discharge raw sewerage into the watercourse to which they are immediately adjacent. Septic tank discharges from houses along Bayou Barataria go either directly into that bayou or into drainage ditches which eventually drain to the bayou. Most septic tank problems may be attributed to poor soil percolation characteristics, undersized drain fields, high water tables, clogged drain fields, or poor construction techniques. A

Table 4-4

SEWERAGE FLOWS FOR THE WEST BANK OF JEFFERSON PARISH

TREATMENT FACILITY	DESIGN CAPACITY (MGD)	AVERAGE DRY WEATHER FLOW (MGD)	RETURN SEWAGE FLOW (MGD)	INFILTRATION (MGD)	INFLOW (MGI)
Terrytown #1	0.63	0.63	0.38	0.25	0.40
Terrytown #2	1.40	1.33	0.81	0.52	0.85
Meadowbrook	1.36	1.42	0.88	0.55	1.21
Harvey	1.00	1.81	1.04	0.77	2.15
Woodmere	0.70	0.96	0.53	0.43	0.44
Floral Haze	0.06	0.04	0.03	0.01	0.07
Marrero	4.35	5.38	3.04	2.34	9.79
Marrero Oxidation Pond	0.34	1.14	0.60	0.54	1.17
Bayou des Familles	0.65	0.13	0.08	0.05	0.11
Bridge City	1.04	1.25	0.65	0.60	0.65
Avondale North	0.15	0.15	0.11	0.04	0.32
Avondale South	1.10	0.87	0.43	0.44	0.97
Floral Acres	0.15	0.15	0.09	0.06	0.25
Live Oak	0.15	0.08	0.04	0.04	0.05
TOTALS.	13.08	15.34	8.71	6.64	18.43

Note: MGD = Million Gallons Per Day; MGI = Million Gallons Per Inch of Rainfall

Source: Roy F. Weston, Inc., 1981; URS Company, 1981.

small percentage of homes along Bayou Barataria have no septic tanks and discharge raw sewerage directly into the bayou.

Light industry is relatively sparse throughout the Lafitte area, and most of these industries generate domestic wastewater only and have septic tanks on the premises to handle the wastewater. Camcraft, Inc. has the only known point discharge, a 6,000 gpd secondary treatment plant.

4.2 PURPOSE OF EIS

The EPA determined that an environmental impact statement (EIS) was necessary regarding any proposed or alternative wastewater facilities considered for the West Bank of Jefferson Parish. The EPA decision was announced in a Notice of Intent which was distributed to federal, state and local agencies and individuals, and also published in the Federal Register. This EIS has been prepared using the "piggyback" approach, whereby the impact evaluation for EPA was completed (by VTN Louisiana, Inc. of Metairie, Louisiana) concurrently with preparation of the wastewater facilities plan.

This EIS is intended to provide essential information regarding the options available for treatment of wastewater, with particular reference to the issues outlined above and discussed in Chapter 6. The purpose of the information is to permit citizens and government officials to make an informed choice among the available alternatives, so that the decisions made will be of environmental benefit to the project area, Jefferson Parish, and the nation as a whole. In evaluating alternatives, the technique of cost-effectiveness analysis is used. The analysis involves comparing all alternatives in a logical, objective, and systematic manner in order to identify relative merits and deficiencies. Where practical, the comparisons are quantitative, and, in some cases, they involve the use of monetary values. The goal of the analysis is to identify the most cost-effective alternative, which is the option that achieves all requirements mandated by federal, state and local laws and regulations, including environmental requirements, and does so with the minimum long-term cost to society--that is, with the most benefits and lowest attainable combination of dollar expenditures, environmental sacrifices, and social burdens.

While quantitative and monetary values are used in the analysis, cost-effectiveness is partly dependent upon qualitative considerations and subjective judgments. Consequently, the results of the analysis are neither absolute nor fixed.

4.3 ISSUES

Major concerns identified and evaluated in the EIS include:

- † PROJECT ALTERNATIVES - All feasible project alternatives, including the No Action alternative, were evaluated for environmental soundness.
- † PRIMARY AND SECONDARY IMPACTS - All primary and secondary impacts, both beneficial and adverse, that could result from conveyance system or treatment plant construction were evaluated. Primary consideration was given to water quality, air quality, cultural resources and biological resources, with special attention focused on wetlands and endangered species.
- † SOCIOECONOMIC EFFECT OF CONSTRUCTION/OPERATION - Impacts of this project on the economic stability of the citizens, both directly and indirectly, were analyzed.

Also, as a result of the public participation program for this project, additional issues were considered in the preparation of this EIS. They include:

- † Relationships between treatment levels and effluent discharge points;
- † Interim accommodation of new development;
- † The number and location of new wastewater treatment facilities;
- † Cost and safety factors of one- versus two-plant concepts;
- † Use of advanced waste treatment for treatment facilities discharging to the Mississippi River;
- † Industrial input to the system; and
- † Potential conflict with the proposed new Mississippi River bridge crossing in Jefferson Parish.

5. DESCRIPTION AND EVALUATION OF ALTERNATIVES

This chapter describes and evaluates alternative plans for controlling water pollution from sewerage effluent on the West Bank of Jefferson Parish. Alternatives considered by the parish are presented in section 5.1 below. The No Action alternative is discussed first as a point of reference. Next, the factors considered in the development of a set of preliminary alternatives are discussed, followed by an evaluation of the resultant alternatives and an indication of those eliminated from further consideration. Finally, a set of final alternatives is selected and evaluated in terms of their environmental impacts. Section 5.1.6 discusses alternatives for the Lafitte area and shows their relationship to the overall West Bank facilities planning process. Alternatives available to the EPA, including funding alternatives, are discussed in section 5.2 In all cases, the evaluation focuses on key issues which bear on the selection of the "best" (most cost-effective) alternative. Technical details on these issues are presented in Chapter 6.

5.1 ALTERNATIVES CONSIDERED BY THE APPLICANT

5.1.1 No Action Alternative

For reference purposes, it is useful to consider what would happen if Jefferson Parish makes no improvements to the existing wastewater management system. EPA regulations require that a 20-year planning period be considered in a wastewater facilities plan. The design year used in this project, therefore, is 2005. Future population for the planning area was projected by the Facilities Plan Engineer utilizing data from the Regional Planning Commission for Jefferson, Orleans, St. Bernard and St. Tammany Parishes (RPC) and the Jefferson Parish Planning Department. These projections were combined with the results of the I/I analysis to project future wastewater flows (Table 5-1). As can be seen from this table, the existing wastewater management system will be grossly overloaded by the year 2005 unless substantial improvements are instituted.

The Facilities Plan Engineer also estimated the total amount of pollution that would be added to the area watercourses if the No Action alternative is

Table 5-1

PROJECTED WASTEWATER FLOWS

PLANT	DESIGN CAPACITY (MGD)	POPULATION		PROJECTED FLOW (MGD) (2005)
		PRESENT	2005	
Terrytown No. 1	0.63	7,060	7,010	0.63
Terrytown No. 2	1.40	16,805	22,005	1.79
Meadowbrook	1.36	15,310	21,625	1.98
Harvey	1.00	19,975	72,380	6.40
Woodmere	0.70	7,200	12,270	1.40
Floral Haze	0.06	570	570	0.05
Marrero	4.35	45,720	75,895	8.02
Marrero Oxidation Pond	0.34	8,740	11,455	1.38
Bayou des Familles	0.65	1,850	19,310	1.66
Bridge City	1.04	10,530	23,415	2.38
Avondale North	0.15	1,875	2,415	0.20
Avondale South	1.10	12,910	26,845	2.09
Floral Acres	0.15	1,960	12,010	1.03
Live Oak	0.15	1,050	18,295	1.59
TOTALS	13.08	151,555	325,500	30.60

Source: URS Company, 1981.

implemented. The standard characteristics of raw sewage and removal efficiency of a treatment plant at design flow were applied to the projected flows of each existing plant. Daily pollutant discharge rates were estimated and are shown in Table 5-2. Due to the highly variable levels of chlorination available, the Facilities Plan Engineer indicated that fecal coliform counts cannot be accurately estimated. However, it is possible that under extreme overloading conditions most plants would frequently discharge effluents with unsatisfactory fecal coliform counts. Adding all of the contributory discharges to each receiving stream, the total daily pollution rates for each waterbody were calculated (Table 5-3). Under the No Action alternative, wasteloads to receiving waters and Barataria Bay will increase and result in further degradation of natural resources. Consequently, the No Action alternative is not acceptable. At a minimum, some action must be taken to resolve the existing pollution problem and bring Jefferson Parish into compliance with effluent standards.

5.1.2 Development of Preliminary Alternatives

Service Area Designations. There are a large number of possible waste collection and treatment alternatives for the West Bank. The starting point for analyzing these alternatives is the existing system, which brings wastewater to a limited number of specific locations where treatment facilities now exist. While use of the existing facilities may or may not be included in the selected plan, wastewater flows are presently concentrated at these points and, thus, they are logical sites for treatment or transfer facilities. There are other jurisdictional barriers (such as municipal boundaries) and physical barriers (such as the Harvey Canal) which tend to subdivide the planning area. For purposes of evaluating alternatives, the planning area was subdivided into three zones by the Facilities Plan Engineer (see Figure 5-1). The zone boundaries are as follows:

- † ZONE I: includes all of the area bounded by St. Charles Parish on the west, the City of Westwego on the east, the Mississippi River on the north, and the Lake Cataouatche levee on the south;
- † ZONE II: includes the area bounded by the Mississippi River on the north, the Harvey Canal on the east, and the hurricane protection levee and City of Westwego on the west;

Table 5-2

PROJECTED YEAR 2005 AVERAGE DAILY POLLUTANT DISCHARGE FOR "NO-ACTION" PLAN

(all values in lbs/day)

PLANT	BOD	COD	TSS	NH_3	PO_4	TKN	OIL & GREASE
Live Oak	2440	6255	2440	320	245	585	970
Floral Acres	1505	3910	1501	200	145	375	595
Avondale North	65	320	65	35	45	45	35
Avondale South	2145	6495	2145	365	365	760	860
Bridge City	2520	7350	2520	410	330	820	1005
Marrero	7260	22640	7260	1315	1140	2695	2905
Marrero Oxidation Pond	1755	6455	1755	255	190	495	710
Bayou des Familles	1880	5350	1880	275	220	540	710
Floral Haze	20	135	20	10	10	20	20
Woodmere	1335	4075	1335	230	190	465	530
Harvey	9270	24200	9270	1210	940	2330	3715
Terrytown No. 1	300	1070	300	65	55	135	80
Terrytown No. 2	1015	3955	1015	275	245	555	400
Meadowbrook	1325	4710	1325	300	265	630	530

Source: URS Company, 1980.

Table 5-3

"NO ACTION" PLAN YEAR 2005 DISCHARGE POLLUTION RATES

WATERBODY	TOTAL DISCHARGE FLOW (MGD)	POLLUTANT (LBS/DAY)						
		BOD	COD	TSS	NH_3	PO_4	TKN	OIL & GREASE
Bayou Verret	2.62	3945	10165	3945	520	390	960	1565
Bayou Segnette	14.05	13745	43260	13745	2380	2070	4815	5515
Bayou Barataria	12.25	13165	38145	13165	2090	1705	4135	5275
Bayou des Familles	1.66	1880	5350	1880	275	220	540	710

Source: URS Company, 1980.

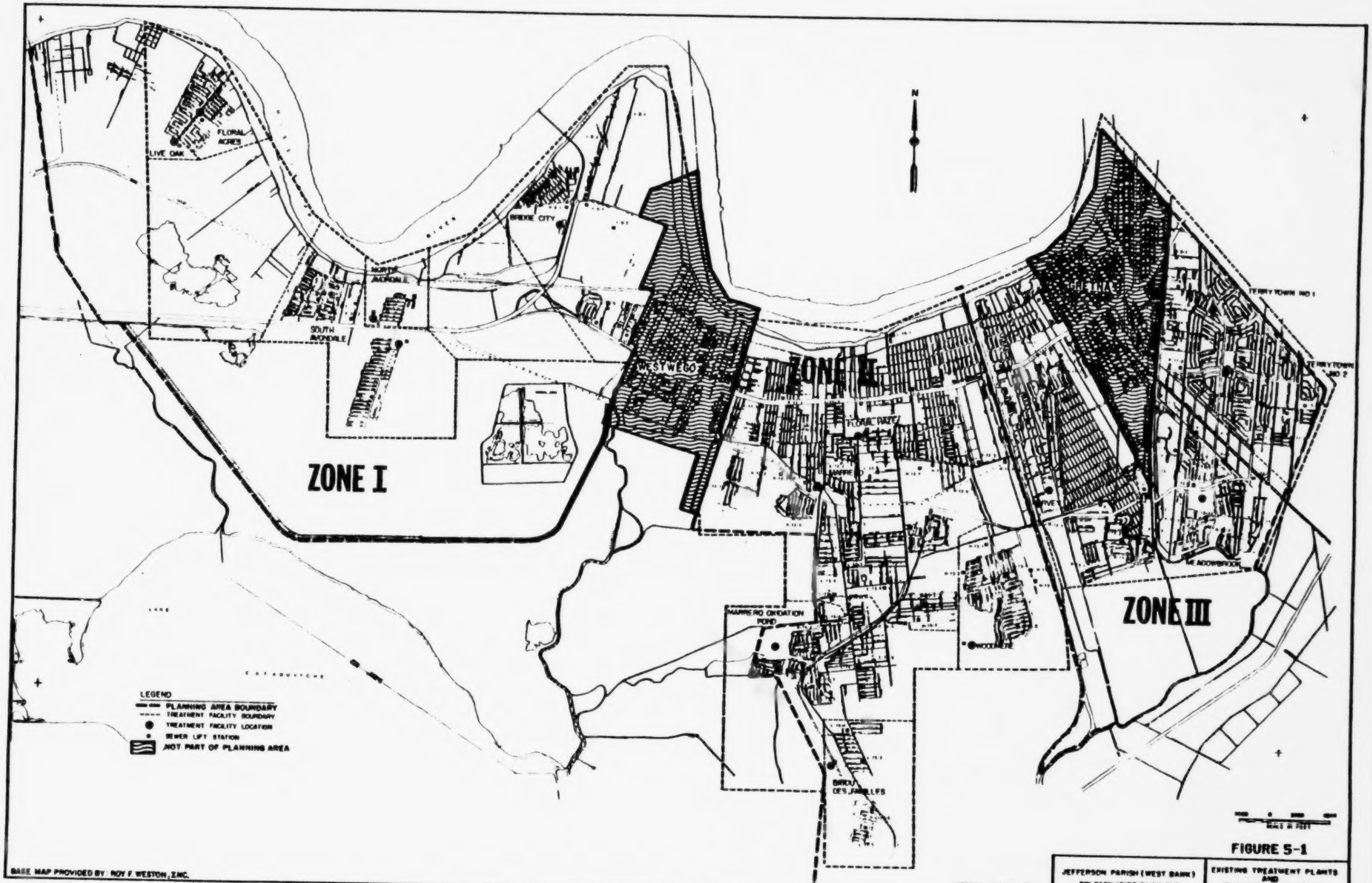

N
LIVE OAK
FLORAL ACRES
BRIDGE CITY
NORTH AVONDALE
SOUTH AVONDALE
WESTWEGO
ZONE I
ZONE II
FLORAL PARK
MARRERO
GRETNA
TERRYTOWN NO 1
TERRYTOWN NO 2
HARVEY
MEADOWBROOK
ZONE III
WOODMERE
MARRERO OXIDATION POND
BAYOU DES FAMILLES
LAKE CATAOUATCHE
LEGEND
PLANNING AREA BOUNDARY
TREATMENT FACILITY BOUNDARY
TREATMENT FACILITY LOCATION
SEWER LIFT STATION
NOT PART OF PLANNING AREA
SCALE IN FEET

FIGURE 5-1

JEFFERSON PARISH (WEST BANK)
201 FACILITIES PLAN EIS

EXISTING TREATMENT PLANTS
AND
PLANNING AREA ZONES

BASE MAP PROVIDED BY: ROY F. WESTON, INC.

VTN louisiana, Inc.

† ZONE III: includes the area bounded by the Harvey Canal on the west, Plaquemines Parish on the southeast, Orleans Parish in the northeast, and the Mississippi River on the north; excluded is the area within the corporate limits of the City of Gretna.

Conveyance System Alternatives. Three principal types of conveyance systems were evaluated by the Facilities Planning Engineer. These systems were a gravity system, a pressure sewer system, and a vacuum sewer system.

Gravity System

In a gravity system underground piping is installed along a continuous downward grade, eventually arriving at some termination point such as a pumping station wet well or a wastewater treatment plant. Service lines connect houses and other buildings to collector sewers which are generally located in roadways. The collector sewers convey the wastewater by gravity to larger trunk or interceptor sewers. The trunk or interceptor sewers carry flows of each service area to a treatment plant.

Pumping stations and force mains are used in conjunction with gravity sewers to avoid deep trenching and high construction costs. Pumping stations "lift" wastewater from a deep sewer and deposit it into a shallow manhole through a pressure pipe or force main. The generally flat topography of the planning area will make it necessary to install pumping stations throughout the conveyance system. Pumping stations will also be needed at each treatment plant in order to develop sufficient head for the wastewater to flow by gravity through the plant and to provide for discharge to the selected disposal point. Four types of pumping stations were evaluated: the wet pit station, the dry pit station, the grinder pump station, and the ejector station.

The wet pit station consists of a below-ground wet well containing installed submersible pumps or suction lines to aboveground self-priming pumps. The dry pit station consists of a below-ground wet well with pumps either aboveground or in a separate below-ground enclosure. Grinder pumps grind the wastewater in a wet pit below-ground and discharge a finely-ground slurry into small diameter pressure sewers. An ejector station consists of a below-ground compartment containing one or more pneumatic ejectors.

The gravity system has been recommended by the Facilities Plan Engineer for the majority of the planning area. This selection was based on the simplicity of operation, compatability with existing systems, and cost factors. Pumping stations will be either the aboveground dry pit type utilizing self-priming horizontal centrifugal pumps, or wet pit stations using submersible pumps. This selection was based upon the Facilities Plan Engineer's past experience and the preferences of the parish operations staff.

Pressure System

A pressure sewer system generally consists of a grinder pump installed within a tank that receives wastewater from one or more residences or buildings. The grinder pump discharges a finely-ground slurry into small diameter pressure piping. The wastewater from the pressurized collection system may discharge into a wet well of a conventional pumping station, where it can be pumped directly to the treatment facilities or discharged into a trunk sewer.

The advantages of this type of system include lower piping and trenching costs, elimination of manholes, and reduced environmental impacts. Disadvantages are the operation and maintenance expense of the grinder pumps. The Facilities Plan Engineer recommends that a pressure sewer system be considered only where a small number of people in a remote area must be served and gravity mains are not feasible due to deep trenching requirements.

Vacuum System

A vacuum sewer system is a mechanized system of wastewater transport utilizing differential air pressure to create flow, as opposed to the gravity-induced flow of conventional conveyance systems. Advantages of this type of system include lower piping and trenching costs and the elimination of manholes. Disadvantages are the cost of pneumatic valves at every input point, the additional vacuum pumps required in the collection and pumping stations, and the necessary maintenance of the pneumatic valves. Use of a vacuum system is not recommended by the Facilities Plan Engineer.

Rehabilitation of Existing System

As described in Chapter 4, an infiltration/inflow analysis survey of the existing sanitary sewer system was performed. A cost-effectiveness analysis survey of the existing sanitary sewer system determined that infiltration was not excessive; however, it was found to be more economical to remove inflow from the system through rehabilitation. The next step in this program is the performance of a Sewer System Evaluation Survey (SSES) to identify inflow sources.

The SSES will provide detailed recommendations for location and type of repairs required to abate inflow. Cost estimates for each rehabilitation method will also be provided. The third and final phase of the overall sewer system evaluation will be the sewer system rehabilitation in accordance with the findings of the SSES.

Treatment Process Alternatives.

Conventional Treatment

Several different types of unit processes were considered by the Facilities Plan Engineer. The liquid treatment systems evaluated are shown in Table 5-4.

The most feasible secondary treatment process system was determined as follows: screening and comminution, aerated grit removal, primary clarification, completely mixed air activated sludge, and final clarification. For alternatives requiring advanced treatment, the same process train would be utilized with filtration and chlorination added.

A significant factor in the selection of the activated sludge process was that the proposed East Bank wastewater treatment facility will also employ this process. The parish has expressed a strong preference for a similar plant on the West Bank. Matching treatment systems would afford an easier exchange of equipment and operating personnel. A cost-effectiveness analysis performed by the Facilities Plan Engineer determined that there is a slight economical advantage to plastic media trickling filter systems over conventional air activated sludge. The higher initial construction costs of the trickling filters is offset by the higher operation and maintenance cost of activated sludge. It was concluded, however, that this cost advantage would not outweigh the benefits of having similar plants on both banks of the parish.

Land Treatment

The Clean Water Act encourages land treatment of municipal wastewater where practicable. Where proper conditions exist, land application can replace or be used in combination with conventional in-plant treatment processes to produce a high quality effluent.

Land application of wastewater offers several advantages over conventional treatment processes:

Table 5-4

TREATMENT SYSTEMS

UNIT PROCESSES	SYSTEMS	
	SECONDARY	ADVANCED
PRELIMINARY TREATMENT	Screening, comminution, grit removal	Screening comminution, grit removal
PRIMARY TREATMENT	Primary clarification	Primary clarification
SECONDARY TREATMENT	Step aeration, final clarification Complete mix activated sludge, final clarification Extended aeration activated sludge, final clarification High purity oxygen activated sludge, final clarification Activated carbon activated sludge, final clarification Trickling filter, final clarification Rotating biological contactors, final clarification	Step aeration, final clarification Complete mix activated sludge, final clarification Extended aeration activated sludge, final clarification High purity oxygen activated sludge, final clarification Activated carbon activated sludge, final clarification Trickling filter, final clarification Rotating biological contactors, final clarification
ADVANCED TREATMENT	None	Filtration, chlorination

- † provides more benefits than conventional treatment and discharge (including recovery and beneficial reuse of wastewater);
- † provides removals comparable to the best available advanced sewage treatment;
- † has been used for decades in both small- and large-scale systems (Muskegon, Michigan);
- † will satisfy both the 1983 (fishable, swimmable waters) and 1985 (elimination of pollutant discharges to waterways) requirements; and
- † has the potential for significant cost savings.

Land application techniques provide treatment of wastewater by means of biological treatment mechanisms in the vegetation-soil complex and by physical and chemical purification mechanisms within earth and soil materials. Ultimate disposal of treated wastewaters on land prevents degradation of surface water quality, particularly for smaller streams which might be incapable of handling normal effluent loadings under severe seasonal, low-flow conditions. Land application of wastewater may also provide for recharge of groundwater resources. The application of wastes on land may be considered a recycling process for the essential nutrients and biodegradable organic materials, but can only be considered a repository for all other nonessential and non-biodegradable components.

Three principal land application systems exist: irrigation (often referred to as a "slow rate system"); rapid infiltration (also called "infiltration-percolation"); and overland flow. Although overland flow systems can treat the greatest volume of wastewater per unit area of land, this method generally produces a lower quality of renovated wastewater.

Irrigation is the controlled discharge of effluent by spraying or surface spreading onto land to support plant growth. Adequately treated effluent (secondary treatment with chlorination is generally required) may be used to irrigate forestland, agricultural lands (nonfood crops), parks, golf courses, and other landscaped areas. Site selection factors include a soil depth of five feet or more, a minimum of three feet to groundwater, soils that are well drained, and slopes less than 15 per cent. Application rates vary with site characteristics and the crop grown.

Rapid infiltration (infiltration-percolation) systems usually distribute secondary effluent into spreading basins. Unlike irrigation treatment, in which a portion of the wastewater is lost through crop uptake and evaporation, most of the applied wastewater in a rapid infiltration system percolates through the soil and eventually reaches the groundwater. Vegetation is generally not a component of this system. Wastewater is applied to rapidly permeable soils (sands and sandy loams) and treated as it moves through the soil matrix. Rapid infiltration systems can accommodate a significantly greater wastewater flow per unit area of land than irrigation systems. Analysis of the soils in the planning area indicates that all soils exhibit groundwater depths of less than ten feet at seasonal high groundwater, thereby making the concept of infiltration-percolation infeasible.

Overland flow is the controlled discharge, by spraying or other means, of effluent onto the land with a large portion of the wastewater appearing as runoff. Overland flow can be accomplished over relatively impermeable soils and gently sloping terrain, has the advantage of avoiding groundwater degradation, can provide economic return through the growth and sale of a crop, and also can provide an effluent suitable for industrial or agricultural reuse application.

During the preliminary development of alternatives, the Facilities Plan Engineer determined that the only type of land treatment possible was overland flow. This determination was made after considering the types of soil and terrain in the planning area. It was further determined that overland flow was practical only in the planning area west of the City of Westwego. The other portions of the planning area lack sufficient vacant land of adequate slope for such a system.

Aquatic Treatment

The use of aquaculture concepts for wastewater treatment has received increasing attention in recent years. Systems studied to date have included both natural and constructed wetlands, ponds, raceways and other structures, and have been based on various combinations of aquatic plants and animals. Some of these systems have shown a potential for reducing energy requirements and operation and maintenance costs.

A typical aquatic treatment system consists of one or more aquatic processing units. These are similar to conventional waste stabilization ponds, except that they are stocked with floating aquatic plants such as water hyacinths or duckweeds, emergent aquatic plants such as reeds or bulrushes, or submerged aquatic plants such as algae or pondweeds. In some of the more complex systems, aquatic animals such as zooplankton or fish may also be used (URS Company, 1980).

Aquatic treatment systems are normally preceded by pretreatment that is equivalent to primary treatment and in which gross pollutants are removed. The principal mechanisms of pollutant removal in aquaculture systems are very similar to those found in conventional secondary wastewater treatment facilities. Biodegradable matter is removed by adsorption on substrate and plant surfaces, by decomposition or degradation through oxidative and reductive processes, and by bacterial and animal consumption or absorption. Heavy metals are removed by adsorption by plants and animals. The range of treatment given by an aquaculture system extends from something better than primary to advanced after sand filtration of the effluent. Development of reliable engineering criteria for design, operation and maintenance of aquatic treatment systems will require additional research and study.

The Facilities Plan Engineer considered the location of aquatic systems in the wetlands within the existing flood protection levees. Sites outside the flood protection levees were not considered to be suitable for aquatic treatment systems.

Discharge Alternatives. Effluent discharge points for the planning area alternatives are either to the Mississippi River or to the parish canal system (i.e., Barataria Basin). The anticipated effluent limits for discharge to these points were requested by the Facilities Plan Engineer from the Louisiana Department of Natural Resources (LDNR) and the Louisiana Department of Health. Although no firm response was made to this inquiry, informal communication indicated that limitations for discharge to the Mississippi River can be expected to be "secondary" (i.e., 30 mg/l BOD and 30 mg/l total suspended solids). Discharges to the Barataria Basin tributaries can be expected to be more stringent due to the sensitive nature of these waters. The two most recently built wastewater treatment plants in the planning area discharge effluent to the Barataria Basin and were required to have advanced treatment.

Exact effluent limitations for any new or upgraded wastewater treatment plants will be developed when an application for a NPDES permit is filed for the proposed facilities. However, for the purposes of developing alternatives, secondary treatment for river discharge and advanced treatment for canal discharge were assumed by the Facilities Plan Engineer. Generalized discharge alternatives considered for the planning area were as follows:

- † secondary treatment and river discharge,
- † advanced treatment and canal discharge,
- † land treatment and river discharge,
- † land treatment and canal discharge,
- † aquatic treatment and canal discharge, and
- † advanced treatment and river discharge.

The last option was offered by the Citizens Advisory Committee (CAC) and was based on possible public concern about wastewater discharges upstream of the Gretna and Algiers water intake structures. The CAC suggested that the public might be willing to pay the increased cost of advanced treatment prior to river discharge.

Sludge Management. Reduction of wastewater impurities through the treatment plant processes is accompanied by the creation of a solid residue known as sludge. Sludge requires proper treatment and disposal. A wide range of sludge treatment and disposal methods is available. The Facilities Plan Engineer has studied the advantages and disadvantages of these various methods.

The solids handling system evaluated for secondary sludge included thickening, either by gravity or not at all. Secondary sludge was then mixed with primary sludge and the resultant sludge was evaluated for each combination of the following systems: digestion, either aerobic digestion or anaerobic digestion; dewatering, either vacuum filter, filter press, centrifugation, or drying beds; disposal, either hauling and landfill, or fluidized incineration. These options were evaluated by the CAPDET computer program (see "Identification of Preliminary Alternatives" below) for a wide spectrum of flows associated with various accompanying secondary systems.

For the digestion process, anaerobic digestion with utilization of sludge gas was found to be most economical. Mechanical press dewatering was the selected method, with belt filter presses being more economical than plate and frame presses. Hauling the digested and dewatered (dried) sludge to a landfill was the favored disposal method.

Commercial and Industrial Wastewater. A Jefferson Parish Industrial Pretreatment Program was initiated in 1978 following the adoption of the Jefferson Parish Drainage and Sewerage Disposal Law, Ordinance No. 13127. The Environmental and Development Control Department has been given the responsibility of ensuring compliance with the provisions of the Ordinance, which requires permits for all significant industrial and commercial discharges to the sanitary sewer or storm drainage sewer. The parish received a grant from the EPA in February, 1981 for further development of a pretreatment program.

Extensive priority pollutant, oil and grease, cyanide, phenol, and asbestos sampling and analysis of wastewaters began in November, 1981. Other portions of the program include an evaluation of legal authority, an industrial waste survey, a determination of informational requirements, a public participation program, and a development of pretreatment limitations. All portions of the pretreatment program have been initiated with completion scheduled for December, 1981.

There are no major industries presently discharging wastewater into the West Bank sewer system. In order to assure that no significant discharges were overlooked, an informational letter and a questionnaire were sent to 1,263 water and/or sewer users. The goal of the questionnaire was to determine the magnitude and method of disposal of the user's industrial wastewater, as well as to determine the industries' future plans. Industries which did not respond were contacted by telephone and the necessary information was obtained.

In addition to surveying potential future industrial users of the sewer system, water consumption records of the parish were examined in order to identify major industrial water users and to determine if their wastes enter or might enter the parish system. This phase of the facilities plan revealed the following:

† Significant industrial water users discharge their wastewater directly to surface waters or drainage canals and have NPDES permits,

- † Only five industries with a total flow of 650,000 gpd indicated that they might discharge to the parish system in the future, and
- † Total water consumption for major commercial and industrial users is less than 3 mgd.

The Facilities Plan Engineer has projected a total future design flow of 30.58 mgd for the year 2005. This is expected to be adequate for sanitary wastewater from households and business establishments. The parish has decided not to provide excess capacity in any new wastewater treatment works in order to handle industrial wastewater not currently being treated or expressing a desire to be treated by the parish.

Wastewater Reuse. The Clean Water Act encourages the resue of wastewater and by-product recovery. Renovated wastewater can be used for municipal or industrial purposes or for groundwater recharge. Wastewater reuse is most practicable in areas where water resources are in short supply or where stringent effluent limitations require that treatment plants obtain high degrees of treatment prior to discharging effluent to receiving waters. However, Louisiana has an abundance of both surface and groundwater, and the majority of treatment needs in the planning area can be met by secondary treatment levels.

Identification of Preliminary Alternatives. In order to evaluate the many wastewater collection, treatment, and discharge alternatives that were possible, the service area (zone) designations described earlier were utilized. The Facilities Plan Engineer conducted an initial evaluation of general service area alternatives by zone and, subsequently, analyzed regional alternatives involving transport of wastewater across zone boundaries.

To screen the available alternatives to a workable number, the Facilities Plan Engineer used a computer model developed by the EPA and the U.S. Army Corps of Engineers. This model, known as the Computer Assisted Procedure for the Design and Evaluation of Wastewater Treatment Systems (CAPDET), provides a cost-effectiveness analysis of new or upgraded wastewater treatment facilities. Application of the CAPDET model and other engineering analyses resulted in the selection of 20 preliminary alternatives. These preliminary alternatives are described in Table 5-5.

Table 5-5

PRELIMINARY ALTERNATIVES

ALTERNATIVE	DESCRIPTION
1	Regional Secondary Treatment at Marrero or a new Zone II Site (one plant)
2	Regional Secondary Treatment at Harvey (one plant)
3	Zone I Secondary Treatment at Bridge City Zones II and III Secondary Treatment at Harvey, Marrero or a new Zone II Site (two plants)
4	Zones I and II Secondary Treatment at Marrero Zones III Secondary Treatment at Harvey (two plants)
5	Zone I Aquatic Treatment Zones II and III Secondary Treatment at Harvey, Marrero or a new Zone II Site (one aquatic site, one plant)
6	Zone I - Live Oak and Floral Acres to an Aquatic Site, plus Secondary Treatment at Bridge City Zones II and III Secondary Treatment at Harvey, Marrero or a new Zone II Site (one aquatic site, two plants)
7	Zone I Advanced Treatment at Bridge City Zones II and III Secondary Treatment at Harvey, Marrero or a new Zone II Site (two plants)
8	Regional Advanced Treatment at Marrero or a new Zone II Site (one plant)
9	Zone I Secondary Treatment at New River Road Site, plus Secondary Treatment at Bridge City Zones II and III Secondary Treatment at Harvey, Marrero or a new Zone II Site (three plants)
10	Zone I - Live Oak and Floral Acres to an Aquatic Site, plus Avondale and Bridge City to an Aquatic Site Zone II and III Secondary Treatment at Harvey, Marrero or a new Zone II Site (two aquatic plants, one plant)
11	Zone I Secondary Treatment at Bridge City Zone II Secondary Treatment at Marrero Zone III Secondary Treatment at Harvey (three plants)
12	Regional Advanced Treatment at Harvey (one plant)
13	Regional Secondary Treatment at Bridge City (one plant)
14	Zone I Secondary Treatment at Bridge City Zone II Secondary Treatment at Marrero Zone III Advanced Treatment at Harvey (three plants)
15	Zone I - Live Oak and Floral Acres to an Aquatic Site, plus Secondary Treatment at Bridge City Zone II Secondary Treatment at Marrero Zone III Secondary Treatment at Harvey (one aquatic site, three plants)
16	Zones I and II Secondary Treatment at Bridge City Zones III Secondary Treatment at Harvey (two plants)
17	Zone I - Live Oak and Floral Acres to a Land Site, plus Secondary Treatment at Bridge City Zones II and III Secondary Treatment at Harvey, Marrero or a new Zone II Site (one land site, two plants)
18	Regional Aquatic Treatment at Zone Marsh Site (one aquatic site)
19	Upgrading Existing Sites to Secondary Treatment (twelve plants)
20	Upgrading Existing Sites to Advanced Treatment (twelve plants)

Source: URS Company, 1980.

5.1.3 Evaluation of Preliminary Alternatives

The 20 preliminary alternatives were subjected to both an engineering and an environmental review. This screening process was designed to reduce the number of alternatives that would be subjected to more detailed analysis.

Engineering Evaluation. The Facilities Plan Engineer developed cost estimates for the preliminary alternatives. Estimates for capital costs, operation and maintenance costs, and the equivalent uniform annual cost (EUAC) were considered, and the alternatives were ranked under each category. The results of these rankings are shown in Table 5-6. It should be pointed out that alternatives 19 and 20 are presented for comparative purposes and are not feasible based on their cost.

Environmental Evaluation. Each of the preliminary alternatives was analyzed with respect to a number of environmental criteria including impacts to surface water, groundwater, soils, geology, topography, air quality, terrestrial and aquatic ecosystems, land use, socioeconomic conditions, aesthetics, and community attitudes. Noise and traffic impacts due to construction and electrical energy usage were examined also.

Within each area the alternatives were grouped according to their expected environmental impacts. Group 1 included those alternatives which appeared to have positive environmental impacts or minor adverse impacts. Group 2 included those with more adverse impacts than Group 1 alternatives, and the final grouping, Group 3, contained those alternatives with the most apparent adverse impacts. In some cases, impacts could be quantified; in other cases, the impacts could not be quantified and alternatives were grouped based on relative impacts anticipated.

In order to further compare the alternatives, a rating system was developed which assigned a positive, negative, or neutral value to each alternative within a particular impact area. For example, if an alternative was anticipated to have only a minor impact on land use, it was placed in Group 1 and assigned a positive rating of "plus one" (+1). If the anticipated impact on land use was significantly adverse, the alternative was placed in Group 3 and assigned a negative rating of "minus one" (-1). While it was obvious that some areas were more critical than others, the various impact ratings were totaled for each alternative in order to arrive at some preliminary decisions.

Table 5-6

COST RANKINGS OF PRELIMINARY ALTERNATIVES

ALTERNATIVE	EUAC*	CAPITAL COST	ANNUAL O&M COST**
1	$ 7,703,345	$ 69,592,092	$ 1,493,077
2	7,862,861	70,611,387	1,566,417
3	8,056,019	73,021,829	1,542,488
4	8,093,752	73,173,551	1,565,458
5	8,206,500	72,349,128	1,677,429
6	8,225,309	73,398,582	1,631,375
7	8,258,642	73,644,650	1,631,965
8	8,289,221	74,165,673	1,624,711
9	8,295,436	74,229,799	1,639.134
10	8,354,863	73,753,125	1,706,727
11	8,361,643	74,721,794	1,698,613
12	8,450,927	75,202,863	1,706,642
13	8,483,503	74,724,628	1,797,891
14	8,503,152	75,159,767	1,782,031
15	8,522,373	75,755,722	1,764,344
16	8,536,371	76,890,057	1,667,218
17	8,566,688	77,035,221	1,653,623
18	9,020,611	74,295,026	2,241,135
19	11,562,792	94,680,748	3,022,085
20	11,878,639	94,362,174	3,332,906

*Equivalent Uniform Annual Cost

**Annual Operation and Maintenance Cost

Source: URS Company, 1980.

Generally, those alternatives which contained land treatment or aquatic treatment concepts did not rank highly due to the potentially adverse land use impacts, particularly the large amounts of land required for treatment facilities. The remaining highest ranking alternatives included one, two, or three new conventional wastewater treatment plants with (at most) one plant in each of the three service zones.

Alternatives Retained for Further Evaluation. The results of the engineering and environmental evaluations were presented to the CAC and to the general public. Based on input obtained from these sources, preliminary alternatives 1 through 5, 13, 14, and 16 were retained for closer examination.

5.1.4 Final Alternatives

Site Selection Process. Sites which were initially considered as locations for new wastewater treatment facilities were based on expansions of present locations of facilities such as Marrero, Bridge City, and Harvey. Following the screening of preliminary alternatives, these sites were reevaluated by the Facilities Plan Engineer and Jefferson Parish. In addition, aerial photographs were examined to determine all areas large enough to accommodate a regional treatment plant which, at a minimum, would be 35 acres in size. Those sites were then reviewed by Jefferson Parish and most were eliminated based on known current or proposed developments.

In late February, 1981, 12 potential sites were selected by the Facilities Plan Engineer. In late March, 1981, two additional potential sites were selected by Jefferson Parish. The 14 sites were named as follows: Gretna Boulevard, Timberlane, Cousins North, Cousins South, Cousins West, Westwego/Celotex, U.S. 90, LP&L Northwest, LP&L Northeast, LP&L Southwest, LP&L Southeast, Kelvin Tract, Hero Cut-off, and Churchill Farms.

These sites were then evaluated using all available information. Based on land availability, surrounding land use, potential land use of the actual site, and other environmental and engineering considerations, six final sites were selected by the parish for detailed evaluation (Figure 5-2). These sites are briefly described below, and more site-specific information is contained in Chapter 6 under the various impact areas.

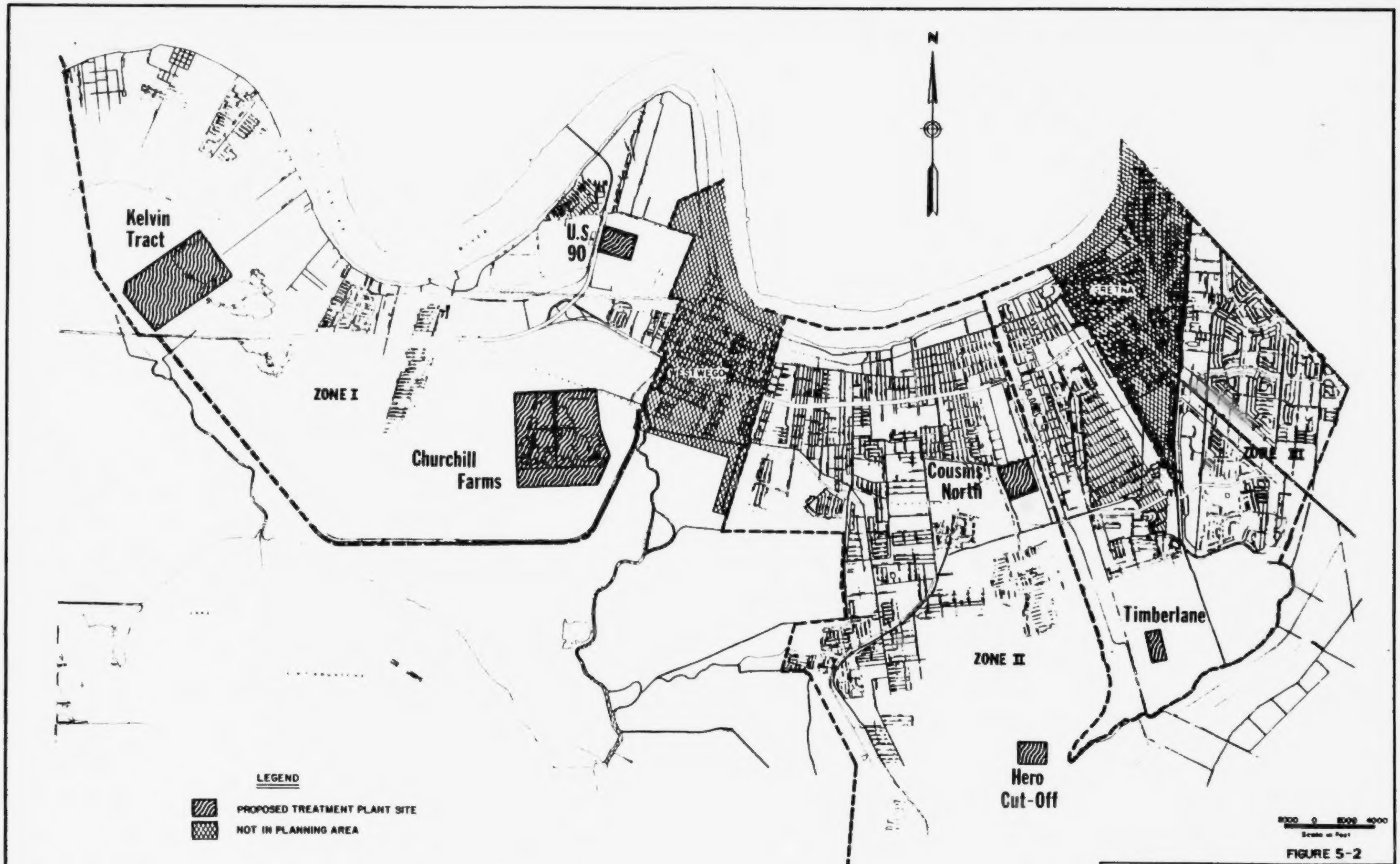

N
Kelvin Tract
U.S. 90
ZONE I
WESTWEGO
Churchill Farms
GRETNA
ZONE III
Cousins North
Timberlane
ZONE II
Hero Cut-Off
LEGEND
▨ PROPOSED TREATMENT PLANT SITE
▩ NOT IN PLANNING AREA
2000 0 2000 4000
Scale in Feet

FIGURE 5-2

JEFFERSON PARISH (WEST BANK) 201 FACILITIES PLAN EIS	PROPOSED TREATMENT PLANT SITES

BASE MAP PROVIDED BY: ROY F. WESTON, INC.

VTN louisana, Inc.

† COUSINS NORTH - This site is in an unincorporated portion of the parish about one mile south of the West Bank Expressway and immediately west of Destrehan Avenue and the Harvey Canal. The site is bordered by Patriot Street on the north and Destrehan Avenue on the east. A drainage canal parallels Patriot Street on the north and a high voltage transmission line crosses the site approximately parallel to Patriot Street. The proposed site is currently vacant and overgrown with brush and trees. Land uses in the area include industrial/shipping facilities servicing the Harvey Canal. These are located to the east along Destrehan Avenue. In the area along Patriot Street, north of the site, there is an electrical transmission substation, a fire station, some prefabricated industrial buildings, and scattered housing. To the west are established housing developments, some within incorporated Marrero and extending along Farrington Drive to Patriot Street about one-quarter mile west of the proposed site.

† TIMERLANE - Located in Lake Timberlane Estates within the industrial area east of the Harvey Canal, this site is just north of Bayou Barataria's intersection with the Harvey Canal. It is east of Peters Road and the Murphy Canal and adjacent to a large pipe storage area. The owner of the pipe storage facility also leases the Timberlane site with an option to purchase. It is overgrown with brush and trees, although improvements are currently being made to prepare it for pipe storage, and was previously used as a landfill area for industrial-type waste disposal. The remainder of the surrounding area is undeveloped and covered by trees and brush.

† HERO CUT-OFF - This wetland site is located in an undeveloped portion of the parish about five miles south of the West Bank Expressway, between the Hero Cut-off of the Gulf Intracoastal Waterway to the east and the Pipeline Canal and Lafitte-Larose Highway to the west. The entire area is overgrown with brush and trees. It is projected as being "Undeveloped Prior to 1995" in the 1995 Land Use Proposal (Regional Planning Commission, 1978). There are two dwellings along the Pipeline Canal about one-quarter mile west of the proposed site.

† CHURCHILL FARMS - This potential site for an aquatic sewage treatment facility is located about 1½ miles southwest of the intersection of

U.S. Highway 90 and the West Bank Expressway. Field reconnaissance and aerial photographs indicate that the area is undeveloped, although it is in the vicinity of housing in South Avondale about 1½ miles to the west. The property extends west and south from the current terminus of Lapalco Boulevard and contains scattered wetland areas. It is projected as being "Undeveloped Prior to 1995" in the 1995 Land Use Proposal, while the area to the north and west is proposed for low density residential development (Regional Planning Commission, 1978).

† U.S. 90 - This site is located in Bridge City and is east of U.S. Highway 90, south of Bridge City Avenue (Old Spanish Trail), and about one-half mile north of the area designated as the Westwego Oil and Gas Field. The site is located directly across from the existing Bridge City sewage treatment facility on U.S. Highway 90. It is designated for commercial uses in the 1995 Land Use Proposal, and adjacent land to the east is designated for high density residential use (Regional Planning Commission, 1978). The area is currently undeveloped and is overgrown with brush and trees. Land uses along U.S. 90 to the west and Bridge City Avenue to the north consist of commercial establishments, primarily automobile-related, including a truck dealership, transmission repair shop and automobile junkyard. These uses are interspersed among undeveloped land, some wooded and some utilized for grazing horses. Housing in the vicinity is located primarily north of Bridge City Avenue, although a large apartment complex is adjacent to the northern boundary of the proposed site. The Louisiana Department of Transportation and Development is presently performing location and feasibility studies for a new Mississippi River bridge in Jefferson Parish. These studies have identified preliminary corridors for the bridge location. One such corridor could conflict with the U.S. 90 treatment plant site; however, the preliminary corridors are subject to modifications as determined by detailed analyses. The detailed engineering analysis is expected to be completed in December, 1981, and one corridor and bridge location will be selected shortly thereafter.

† KELVIN TRACT - This proposed site is located along U.S. Highway 90 West, east of the St. Charles Parish line and west of Waggaman, Louisiana. The tract is a rectangular parcel oriented in a northeast-southwest

direction. The southwestern corner lies south of U.S. 90 and the remainder is north of the highway. All but the southwestern quarter has been designated as wetlands by the U.S. Army Corps of Engineers. The site is presently overgrown with brush and trees. The tract is in an undeveloped portion of the parish which is projected to remain "Undeveloped Prior to 1995" on the 1995 Land Use Proposal (Regional Planning Commission, 1978). However, of the Kelvin Tract's 763 acres, 125 acres have been permitted by the state for solid waste disposal, and the western portion of the tract north of U.S. Highway 90 is currently being used for that purpose.

Description of Final Alternatives. As described above, the detailed treatment plant site selection process resulted in the elimination of those sites contained in the preliminary alternatives. Subsequently, the preliminary alternatives which had been retained for further study were reassessed taking into account the new potential plant sites. This process resulted in a set of ten final alternatives that encompassed the concepts of one, two, or three new treatment plants to serve the West Bank. The No Action alternative was retained as a final alternative for comparative purposes. The most cost-effective aquatic treatment from among the preliminary alternatives was also retained as a final alternative to ensure that land treatment and innovative concepts were fully evaluated. The twelve final alternatives are described in Table 5-7.

The final alternatives require the construction of new wastewater treatment plant(s). This, in turn, necessitates the construction of new pumping stations and force main sewers to convey the wastewater from the present plants (which will be abandoned) to the new sites. The required conveyance systems are similar for each of the alternatives. The number of new pumping stations required is approximately 45, and about 40 miles of new force main construction will also be required. Generally, the new sewers will be constructed in roadways or existing rights-of-way.

Other Considerations. Water conservation practices can reduce the amount of sewage flow reaching a treatment plant. Jefferson Parish does not presently have a water conservation program. Water is plentiful in the planning area and, therefore, water conservation methods were found to be inapplicable to the area by the Facilities Plan Engineer.

Table 5-7

ECONOMIC RANKING OF FINAL ALTERNATIVES

ALTERNATIVE	DESCRIPTION	EUAC* RANK	CAPITAL COST RANK	O&M** RANK
A	Regional Secondary Treatment at Cousins N (one plant)	1	2	1
B	Regional Secondary or Advanced Treatment at Hero Cut-off (one plant)	5	4	9
C	Regional Secondary Treatment at Timberlane (one plant)	3	3	7
D	Zone I Aquatic Treatment at Churchill Farms Zones II & III Secondary Treatment at Cousins N (one aquatic site, one plant)	11	11	2
E	Zone I Secondary Treatment at U.S. 90 Zones II & III Secondary or Advanced Treatment at Hero Cut-off (two plants)	9	9	11
F	Zone I Secondary Treatment at U.S. 90 Zones II & III Secondary Treatment at Cousins N (two plants)	4	5	3
G	Zone I Secondary Treatment at U.S. 90 Zones II & III Secondary Treatment at Timberlane (two plants)	6	6	5
H	Regional Secondary Treatment at U.S. 90 (one plant)	2	1	4
I	Zones I & II Secondary Treatment at U.S. 90 Zone III Secondary Treatment at Timberlane (two plants)	8	8	6
J	Zone I Secondary Treatment at Kelvin, Secondary Treatment at U.S. 90 Zones II & III Secondary Treatment at Cousins N (three plants)	7	7	8
K	Zone I Secondary Treatment at U.S. 90 Zone II Secondary Treatment at Cousins N Zone III Secondary Treatment at Timberlane (three plants)	10	10	10
L	No Action	Not Feasible		

*Equivalent Uniform Annual Cost
**Operation and Maintenance Cost

Source: URS Company, 1981.

Energy conservation will be considered in the design of the final alternatives. Methane gas from the anaerobic sludge digestion process is expected to be used for power at the treatment plant. Solar energy techniques may also be considered, although such techniques were not found to be cost-effective for the East Bank plant which is currently under design.

5.1.5 Evaluation of Final Alternatives

Economic Analysis. The Facilities Plan Engineer conducted a cost-effectiveness analysis of the final alternatives. With the exception of the No Action alternative, each final alternative's cost includes the cost of basins and equipment to properly meet water quality standards, the cost of land, energy and other valuable resources, and annual labor and material operation and maintenance expenses required to operate the system with a high degree of reliability.

First costs and operation and maintenance expenses were based on second quarter 1980 local and national cost listings and experience. The initial capital cost of an alternative can be combined with its annual operation and maintenance cost to permit comparison on an equivalent basis with other alternatives. Equivalent uniform annual cost figures were developed for the final alternatives and were based on an interest rate of 7-1/8 per cent over a 20-year period. The economic ranking of the final alternatives is contained in Table 5-7.

The annual homeowner user charge related to an upgraded West Bank sewerage system has not yet been determined, but will be for the preferred plan once it is selected by the parish. It is anticipated that this information will be available prior to the public hearing on the wastewater treatment facilities plan. The parish is presently undertaking a water and sewer rate study and the results will be incorporated into the development of a West Bank user charge. Development of a user charge at this time is complicated by the uncertainty of the amount of federal funding, if any, that will be available to the parish for construction of the needed facilities.

Environmental Impacts. The environmental impacts of the final alternatives are described in detail in Chapter 6. Table 1-2 presents a summary comparison of the final alternatives.

All of the final alternatives involve abandonment of the existing treatment plants except for the No Action alternative. Pumping stations would replace the plants and convey wastewater from the present plants to new plants for treatment and discharge. For each of the alternatives, the required force mains are similar in extent. These lines would be constructed in roadways and existing rights-of-way. Dust, noise generation and traffic disruption are the environmental impacts associated with construction of these lines. Force main construction would disrupt wetlands where treatment plant sites are in remote areas such as Hero Cut-off and Churchill Farms. However, the impacts noted above for the conveyance system would be similar in their magnitude for all of the final alternatives.

Overall water quality and drinking water supplies would not be adversely impacted by any of the alternatives involving secondary treatment and discharge to the Mississippi River. Plans utilizing advanced or aquatic treatment with canal discharge should also have no detrimental effect on area water quality. However, the possibility of intermittent permit noncompliance is considered greater with advanced treatment systems because of their complexity and the high degree of operational skill required. Water quality, particularly in the marsh backwaters, would be temporarily affected by system failure.

For other impacted areas such as geology, groundwater, and cultural resources, no adverse impacts are expected from any of the alternatives. The impacts in other areas, such as air quality and sound quality, are expected to be relatively minor and are essentially equal for each alternative.

The single most variable environmental factor associated with the final alternatives is facility siting. All but the southwestern corner of the Kelvin Tract is wetlands, and the Hero Cut-off and Churchill Farms sites are partly or entirely wetlands. The other sites are not wetland areas. With the exception of the U.S. 90 site, all of the potential treatment plant sites lie within the 100-year floodplain. Except for the U.S. 90 site again, all of the potential sites exhibit poor soil conditions. In terms of land use, the Cousins North and Timberlane sites are closest to adjacent residential areas. Both the Timberlane and Kelvin Tract sites have been used for landfills.

Mitigating Measures. Unavoidable adverse impacts from the implementation of the final alternatives should generally be of short duration and are primarily associated with construction of interceptors and treatment plant facilities.

The magnitude of the impacts described in Chapter 6 and summarized in Table 1-2 can be reduced by use of appropriate environmental protection measures. It is expected that many of the mitigation measures described below will be incorporated into future construction contracts let by the parish.

Water Quality

Soil loss will occur at all construction sites. Removal of topsoil and organic soil layers can reduce the productivity of the soil, destroy ground cover vegetation, and create unsightly conditions. The erosion of soil into nearby surface waters can affect water quality and disrupt the aquatic ecosystem. Using the measures described below, soil loss and associated adverse effects can be minimized by:

† developing plans to fit drainage patterns, topography, and soils of the construction site;
† minimizing removal of trees and surface vegetation;
† diverting runoff around exposed areas;
† constructing impoundments to trap sediment and reduce runoff peaks before flow leaves construction site;
† limiting exposed land and duration of exposure;
† protecting exposed areas and reducing sediment transport by quick reestablishment of vegetative cover or by hay mulching at a rate of 2 tons per acre;
† establishing permanent vegetation.

Air Quality

Dust and other particulate matter may be released into the atmosphere creating temporary air pollution in the vicinity of the construction sites. Measures to mitigate air quality impacts include:

† sprinkling water on bare or disturbed soils during the construction period to reduce dust emissions;
† proper operation and maintenance of the treatment facilities and pumping stations to minimize odor production.

Sound Quality

Construction activities will produce noise, especially during the operation of heavy equipment, and could also degrade the aesthetic quality of an area for the duration of construction. Plant operation may also cause a minimal increase in background noise levels. Measures to mitigate noise impacts include:

- † use of the best available technology to reduce equipment noise;
- † design of plant layout with noise reduction as a consideration (noise generating equipment should be screened and/or closed in sound attenuating structures).

Aquatic Ecosystems

Short-term soil loss during construction is unavoidable. Effects on receiving waters (including increased turbidity, increased loadings of soil-carried pollutants, streambed siltation, and adverse effects on aquatic life) can be mitigated by using proper erosion control techniques to minimize soil erosion and transport to surface waters.

Terrestrial Ecosystems

Mitigation of impacts to terrestrial ecosystems can be accomplished by the following techniques:

- † revegetation by seeding with native plants suited to site conditions in order to restore or enhance pre-construction conditions.

5.1.6 Lafitte Area Alternatives

Background. A separate wastewater facilities plan and environmental assessment were completed for the Lafitte area in 1978 (Hamilton, Meyer and Associates). The Lafitte planning area encompassed south-central Jefferson Parish on the west bank of the Mississippi River. Generally, its borders were: on the north, the Millaudon Canal; on the south, the end of Louisiana Highway 45; on the east, Bayou des Familles, the Jefferson-Plaquemines parish line, and Bayou Latour; and on the west, Bayou Bardeaux, Lake Salvador, and Bayou Rigolettes. The Town of Jean Lafitte was the only incorporated area within the planning area, which was predominantly within Jefferson Parish's Ward 6.

The most cost-effective alternative identified in the Lafitte facilities plan was the transport of the area's wastewater to a hypothetical, regional West Bank treatment facility. However, since the facilities plan for the entire West Bank had not yet begun, EPA decided to await its completion before making any decisions about the Lafitte area. Furthermore, EPA determined that the Lafitte area alternatives and impacts would be discussed in the West Bank EIS.

Lafitte Project Alternatives. The Lafitte area facilities plan identified several wastewater management alternatives for handling the needs of the area. The alternatives are:

- † ALTERNATIVE NO. 1 - Construct a 0.80 mgd addition to the existing advanced treatment facility at the Bayou des Familles proposed development. Transport wastes from the entire planning area to this single advanced treatment facility, which would discharge to Bayou des Familles.
- † ALTERNATIVE NO. 2 - Construct a 0.80 mgd advanced treatment facility at the Town of Jean Lafitte to handle the wastewater produced by the entire planning area. Transport all wastewater to this facility and discharge to Bayou Barataria.
- † ALTERNATIVE NO. 3 - Construct a 0.20 mgd addition to the existing advanced treatment facility at the Bayou des Familles proposed development, discharging to Bayou des Familles. Construct a 0.60 mgd advanced treatment facility at the Town of Jean Lafitte and discharge to Bayou Barataria. Transport wastewater produced by the southern portion of the planning area to the Town of Jean Lafitte treatment plant.
- † ALTERNATIVE NO. 4 - Construct a 0.20 mgd addition to the existing advanced treatment facility at the Bayou des Familles proposed development, discharging to Bayou des Familles. This facility would service the needs of the northern portion of the planning area. Construct a 0.40 mgd advanced treatment facility at the Town of Jean Lafitte that would discharge to Bayou Barataria. This plant would be utilized by the central portion of the planning area. Construct a 0.20 mgd advanced treatment facility at Lafitte that would serve the southern portion of the planning area. This facility would also discharge to Bayou Barataria.
- † ALTERNATIVE NO. 5 - This alternative is the same as Alternative No. 2, except that the facility would provide secondary treatment and discharge to the Mississippi River through Plaquemines Parish.
- † ALTERNATIVE NO. 6 - Construct pumping stations at all three site locations. Transport all wastewater to a hypothetical, regional treatment facility that would serve the entire West Bank of Jefferson Parish. Since a 201 facilities plan had not yet been completed for the West Bank of Jefferson Parish, it was not known at the time if such a treatment facility would be recommended or where it might be located. For the

Lafitte study analysis, however, it was assumed that this facility would be located at Lapalco and Barataria boulevards and discharge to the Mississippi River.

† ALTERNATIVE NO. 7 - This alternative is the same as Alternative No. 2, except that the facility would provide secondary treatment and discharge to the Mississippi River through Jefferson Parish.

† ALTERNATIVE NO. 8 - This alternative is the same as Alternative No. 1, except that the facility would provide secondary treatment and discharge to the Mississippi River through Jefferson Parish.

† NO ACTION ALTERNATIVE - This alternative would make no improvements to the existing Lafitte system.

Alternative Recommended by Lafitte Area Study. A cost-effectiveness analysis was performed as part of the Lafitte area study to determine which wastewater management system resulted in the minimum total resources costs for the planning period while meeting federal, state, and local requirements. Cost elements included: land purchase, construction costs, non-construction costs (contingencies, engineering, legal and administrative), operation and maintenance costs, replacement costs, salvage value, and project income.

Alternative No. 6 proved to be the most cost-effective. However, due to the uncertainty at that time concerning a regional West Bank facility, this alternative was discarded. When cost factors, environmental impacts, and public input were considered, Alternative No. 2 was selected as the recommended plan. It calls for the construction of a conveyance system to serve those areas in which population densities warrant such action, and the construction of a single treatment plant to serve the needs of the area. This advanced treatment plant would be located adjacent to Louisiana Highway 45 in the Town of Jean Lafitte, west of the Wagner Bridge. The process is contact stabilization followed by filtration, post aeration and chlorination.

Re-evaluation of Lafitte Area Alternatives. In order to ensure integration of the Lafitte area planning with that of the remainder of the West Bank, the Lafitte area alternatives were re-evaluated as part of this EIS and the West Bank facilities plan. Specifically, the recommended Lafitte study alternative (No. 2) was compared to the option of conveying the Lafitte area sewage to a regional West Bank plant (Lafitte Alternative No. 6). These two options were evaluated from both a monetary and an environmental perspective.

The West Bank Facilities Plan Engineer updated the costs appearing in the Lafitte facilities plan to 1980 using the EPA construction index. The result was an EUAC of $303,400 per year for Lafitte Alternative No. 2, which was compared to the alternative option of pumping the wastewater from the Lafitte area to a regional West Bank plant. The cost of the latter option was composed of three elements as follows:

- † Pumpage cost from the Town of Jean Lafitte to the site of the present Bayou des Familles plant. This involves a lift station in the Town of Jean Lafitte and approximately 36,000 feet of 18-inch force main.
- † Increased pumpage cost to include pumpage from the Bayou des Familles plant to any regional plant site, as well as effluent pumping from the treatment facility to its discharge point. This element varies depending on the site of the regional treatment plant.
- † Increased cost of treatment attributable to the Lafitte area wastewater.

The costs associated with this option range from an EUAC of $483,457 per year to $523,389 per year depending upon the location of a regional plant.

5.2 ALTERNATIVES AVAILABLE TO EPA

Three options are available to EPA in executing its Construction Grants Program. These options are: to award grant funds for the construction of the grantee's preferred alternative; to award grant funds for a modified or alternative project; or to deny grant funds.

Award Grants for the Grantee's Preferred Alternative. EPA may award funds for the construction of the parish's preferred alternative once it is selected. Under Public Law No. 97-117, Municipal Wastewater Treatment Construction Grant Amendments of 1981, grants can be awarded for 75 per cent of the eligible project costs until October 1, 1984, at which time grants will be available for only 55 per cent of the eligible project costs. Wastewater treatment plants, interceptor sewers, and collection systems are all eligible categories of projects up until October 1, 1984. However, after this date collection sewers will no longer be eligible except as part of the Governor's discretionary fund, which will be between zero and 20 per cent of Louisiana's total allotment. Grants for 85 per cent of eligible project costs can be made for projects utilizing innovative or alternative technology up until October 1, 1984. After this date funds will be available for 75 per cent of eligible project costs.

Award Grants for an Alternative Project. EPA may award grant funds for the construction of a modified or alternative project if it is determined more cost-effective and has less adverse environmental impacts.

Deny Grant Funds. EPA may decide to deny funding for the construction of any West Bank alternative if it is determined to be ineligible for funding under EPA criteria or if the environmental impacts of the project are deemed significantly adverse. Denial can also be based on a lack of funds, which would depend upon the amount of federal funding received by Louisiana and the project's ranking on the state priorty list. Should EPA deny awarding additional grants to Jefferson Parish, the existing conditions would worsen. As the present treatment facilities become older, the associated operation and maintenance problems would increase. It could be expected that Jefferson Parish would seek other ways to solve these problems, since any decision by EPA to deny funds would not remove the parish's responsibility to improve its treatment works.

6. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

6.1 INTRODUCTION

The environmental consequences of the final alternatives on the affected environment are described in this chapter.

The environmental consequences related to future conditions without a project, or the No Action alternative, are also presented and allow the beneficial and adverse impacts of each alternative to be compared with those related to the applicant maintaining existing facilities.

6.2 ALTERNATIVES CONSIDERED BY THE APPLICANT

6.2.1 Earth Resources

Existing Conditions.

Geology

The landforms of the West Bank of Jefferson Parish were created by the dynamic interaction of sedimentation and channel change of the Mississippi River, by wave and current action of the Gulf of Mexico, and by soil subsidence. The planning area is located in the present Mississippi River Deltaic Plain. Five major delta formations have been defined as a consequence of the six thousand year history of deposition by the Mississippi River (LaDOTD, 1978). All have contributed to land formation on the West Bank to some degree. The natural cycle of deltaic formation was artifically stopped by man-made levee systems constructed over the natural levee on both sides of the present channel of the river. Together with the artificial damming of parts of Bayou Lafourche in 1904, the levees have defined the hydrology of Barataria Basin and have restricted freshwater inflow and deposition of sediments in the basin.

In the northern part of the planning area, elevations are highest along the natural levees. The top stratum, in a north-south direction, consists of natural levee, swamp, marsh, abandoned distributary, interdistributary, intradelta, prodelta, bay sound, and estuarine and near-shore Gulf deposits. Generally, soils closer to the Mississippi River have lower organic content and are less susceptible to soil subsidence. The organic content of the soils increases with the distance to the south from the Mississippi River, with subsequently higher subsidence potential. Land subsidence has also resulted from various reclamation practices such as diking or draining which lead to drying, shrinking and oxidizing of the organic soils.

The southern part of the planning area is impacted by erosion due to wave action and currents in the Gulf of Mexico. The Grand Isle area is a major barrier island in the Barataria Basin. Prior to the construction of the west-end jetty in 1972, this area experienced erosion at its western end and accretion at its eastern end due to the easterly littoral drift of the Gulf. However, the increased stability of Grand Isle has promoted erosion of the Grand Terre Island. Both of these islands provide an important defense against hurricanes and storms.

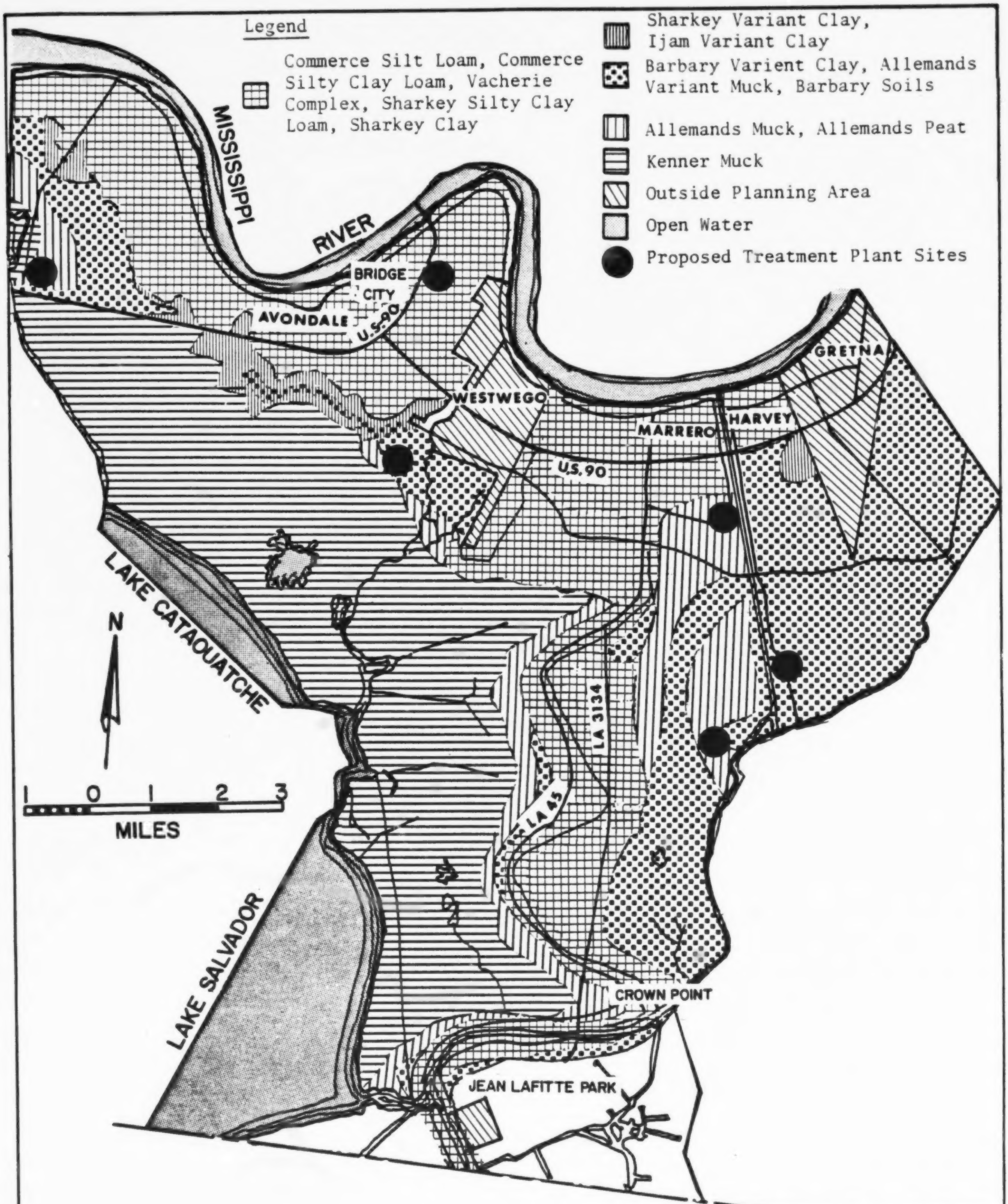
There are a number of sites within the planning area dedicated to the production of petroleum, natural gas and natural gas condensate. There are 18 producing oil fields and 21 producing gas fields in the planning area. The major fields are located at Crown Point, West and South Barataria, Barataria, Bayou Perot, Bayou LaFleur, Lafitte, Little Lake, Three Bayou Bay, Bayou St. Denis, Queen Bess Island, and Bassa Bassa.

Topography

The topography of the planning area is typical of the Mississippi River deltaic plain and of the coastal zone. Elevations range from a maximum of 13 feet above Mean Sea Level (msl) to a minimum of ten feet below msl. The highest points are located along the natural levee of the Mississippi River. Elevations to the south of the levee generally decrease to five feet msl or less within 2,000 feet of the Mississippi River. A strong relationship also exists between elevations and locations of soil types. Due to subsidence, leveed and drained organic soils with elevations below sea level require pumping to maintain the natural flow to the south. Parts of the planning area have been incorporated into pumped drainage districts for over 50 years to accommodate agricultural, residential, and commercial developments.

Soils

There are 15 soil types in the planning area. They are closely associated geographically with their geologic environments, and more specifically to the natural cycle of deltaic formation. Soil groups are outlined on the soil map (Figure 6-1) and described in more detail in Tables 6-1 and 6-2.


Legend
▦ Commerce Silt Loam, Commerce Silty Clay Loam, Vacherie Complex, Sharkey Silty Clay Loam, Sharkey Clay
Sharkey Variant Clay, Ijam Variant Clay
Barbary Varient Clay, Allemands Variant Muck, Barbary Soils
Allemands Muck, Allemands Peat
Kenner Muck
Outside Planning Area
Open Water
● Proposed Treatment Plant Sites
MISSISSIPPI
RIVER
BRIDGE CITY
AVONDALE
U.S.90
WESTWEGO
MARRERO
HARVEY
GRETNA
U.S.90
LAKE CATAOUATCHE
N
1 0 1 2 3
MILES
LA 3134
LA 45
LAKE SALVADOR
CROWN POINT
JEAN LAFITTE PARK

Source: USDA/Soil Conservation Service, 1978

FIGURE 6-1
SOIL SURVEY
JEFFERSON PARISH (WEST BANK)
201 FACILITIES PLAN EIS

VTN louisiana, Inc.

Table 6-1

SOIL CHARACTERISTICS - USE INTERPRETATIONS

SOIL GROUP AND DESCRIPTION	SOIL NAME AND MAP SYMBOL	DEGREE OF LIMITATION AND CHIEF LIMITING FACTORS:				SOIL FACTORS AFFECTING:		SUITABILITY AS SOURCE OF:			
		HOMESITES AND LIGHT INDUSTRY (with community sewage systems)	LANDSCAPING, GARDENING AND LAWNS	PICNIC AREAS AND PLAYGROUNDS	STREETS AND ROADS SIDEWALKS, PATIOS, DRIVEWAYS	DRAINAGE AND SHALLOW EXCAVATIONS	UTILITIES	TOPSOIL	HIGHWAY SUBGRADE MATERIAL	HIGHWAY SUBBASE MATERIAL	RESIDENTIAL FILL MATERIAL
A. Mineral soils with consolidated clayey or loamy layers throughout that typically occur at the higher elevations in the area. Low subsidence potential, low to very high shrink-swell potential, most foundation designs for one and two story buildings do not require piling. Moderate to severe degree of limitation for most urban uses after drainage.	17--Commerce silt loam	Protected:* MODERATE - moderate wetness	Protected: SLIGHT - moderate wetness	Protected: MODERATE - moderate wetness, fair to good trafficability	Protected: MODERATE - fair traffic supporting capacity, moderate wetness	Moderately wet	No significant factor	Good	Fair	Poor to not suitable	Good
	6--Commerce silty clay loam	Protected: MODERATE - moderate shrink-swell potential surface layers, moderate wetness	Protected: MODERATE - moderate wetness, somewhat difficult to work	Protected: MODERATE - moderate wetness, fair trafficability	Protected: MODERATE - fair traffic supporting capacity, moderate wetness	Moderately wet	No significant factor	Fair to good	Fair	Poor to not suitable	Fair to good
	16--Vacherie complex, gently undulating	Protected: MODERATE - very high shrink-swell potential subsoil, medium bearing strength	Protected: SLIGHT - moderate wetness	Protected: MODERATE - moderate wetness	Protected: MODERATE - fair traffic supporting capacity moderate wetness, very high shrink-swell subsoil	Moderately wet	Medium bearing strength	0-18" good, 18"+ poor	0-18" fair, 18"+ poor	0-18" poor, 18"+ not suitable	0-18" good, 18"+ poor
	14--Sharkey silty clay loam	Protected: SEVERE - very high shrink-swell potential, severe wetness, medium bearing strength	Protected: SEVERE - somewhat difficult to work, cracking when dry, severe wetness	Protected: SEVERE - severe wetness, fairly poor trafficability, cracking when dry	Protected: SEVERE - poor traffic supporting, capacity, severe wetness, very high shrink-swell potential	Wet	Medium bearing strength	Poor	Poor	Not suitable	Poor
	13--Sharkey clay	Protected: SEVERE - very high shrink-swell potential, severe wetness, medium bearing strength	Protected: SEVERE - severe wetness, difficult to work, cracking when dry	Protected: SEVERE - severe wetness, poor trafficability, cracking when dry	Protected: SEVERE - poor traffic supporting capacity severe, wetness, very high shrink-swell potential	Wet	Low bearing strength, very high shrink-swell potential	Poor	Poor	Not suitable	Poor
B. Mineral soils with clayey surface layers underlain at 30 to 48 inches (76-122 cm) by semi-fluid clayey layers. Low subsidence potential, very high shrink-swell potential, logs and stumps. Foundation designs for one- or two-story buildings require piling. Severe degree of limitation for most urban uses.	3--Sharkey variant clay	Protected: SEVERE - very high shrink-swell potential, severe wetness, a low bearing strength	Protected: SEVERE - difficult to work, severe wetness, cracking when dry	Protected: SEVERE - severe wetness, poor trafficability, cracking when dry	Protected SEVERE - poor traffic supporting capacity, severe wetness, very high shrink-swell potential	Logs and stumps, somewhat poor side slope stability during initial construction of ditches, wet	Low to medium bearing strength, in the upper layers, very low strength in the lower layers, high water table	Poor	Poor	Not suitable	Poor
	9--Ijam Variant clay	Protected: SEVERE - high shrink-swell potential, severe wetness, low bearing strength	Protected: SEVERE - severe wetness, difficult to work, cracking when dry	Protected SEVERE - severe wetness, poor trafficability, cracking when dry	Protected: SEVERE - poor traffic supporting capacity, severe wetness, high shrink-swell potential	Logs and stumps poor side slope stability during initial construction of ditches, wet	Low bearing strength, high water table, very high shrink-swell potential	0-40" poor, 40"+ not suitable	0-40" poor, 40"+ not suitable	Not suitable	0-40" poor, 40"+ not suitable
C. Mineral soils with clayey or thin organic surface layers underlain at 30 to 40 inches with semi-fluid clayey or organic layers. Medium subsidence potential, none to slight fire hazard, low bearing strength, logs and stumps. Foundation designs for one or two story buildings require piling. Severe degree of limitation for most urban uses after drainage.	20--Barbary Variant clay, drained	Protected: SEVERE - medium subsidence potential, low bearing strength, very high shrink-swell potential	Protected: SEVERE - severe wetness, difficult to work, medium subsidence	Protected: SEVERE - severe wetness, large cracks present when moist	Protected: SEVERE - poor traffic supporting capacity, very high shrink-swell potential, severe wetness	Poor side slope stability during initial construction of ditches, logs and stumps, wet	Very low bearing strength, high water table, high subsidence potential, very high shrink-swell potential, of the mineral layers	Poor	Poor	Not suitable	Poor
	18--Allemands Variant muck	Protected: SEVERE - very high shrink-swell potential, medium subsidence potential, severe wetness, low bearing strength Unprotected: VERY SEVERE - flooding	Protected: SEVERE - severe wetness, difficult to work, medium subsidence, cracking when dry Unprotected: VERY SEVERE - flooding	Protected: SEVERE - severe wetness, poor trafficability, cracking when dry Unprotected: VERY SEVERE - flooding	Protected: SEVERE - poor traffic supporting capacity, very high shrink-swell potential, severe wetness, organic layers Unprotected: VERY SEVERE - Flooding	Medium subsidence potential, logs, stumps, poor side slope stability during initial of construction of ditches, very wet	Very low bearing strength, medium subsidence potential, high water table, very high shrink-swell potential of the mineral layers	Not suitable	Poor to not suitable	Not suitable	Not suitable
	4--Barbary soils	Protected: SEVERE - very high shrink-swell potential, medium subsidence potential, severe wetness, slight fire hazard, low bearing strength Unprotected: VERY SEVERE - flooding	Protected: SEVERE - severe wetness, medium subsidence potential, difficult to work, nutrient deficiency for some plants Unprotected: VERY SEVERE - flooding	Protected: SEVERE - severe wetness, poor trafficability Unprotected: VERY SEVERE - flooding	Protected: SEVERE - poor traffic supporting capacity, very high shrink-swell potential, organic layers not suitable subgrade material Unprotected: VERY SEVERE - flooding	Medium subsidence potential, logs and stumps, poor stabil- of side slopes during initial construction of ditches, very wet	Medium subsidence potential, low bearing strength, high water table, very high shrink-swell potential of mineral layers	Not suitable	Poor to not suitable	Not suitable	Not suitable

*Note: Protected means protected by levees with pumpoff drainage if needed. Unprotected means subject to flooding.

Table 6-1 (Continued)

SOIL CHARACTERISTICS - USE INTERPRETATIONS

SOIL GROUP AND DESCRIPTION	SOIL NAME AND MAP SYMBOL	DEGREE OF LIMITATION AND CHIEF LIMITING FACTORS				SOIL FACTORS AFFECTING:		SUITABILITY AS SOURCE OF:			
		HOMESITES AND LIGHT INDUSTRY (with community sewage systems)	LANDSCAPING, GARDENING AND LAWNS	PICNIC AREAS AND PLAYGROUNDS	STREETS AND ROADS SIDEWALKS, PATIOS, DRIVEWAYS	DRAINAGE AND SHALLOW EXCAVATIONS	UTILITIES	TOPSOIL	HIGHWAY SUBGRADE MATERIAL	HIGHWAY SUBBASE MATERIAL	RESIDENTIAL FILL MATERIAL
D. Organic soils with 16 to 51 inches of organic material over semifluid clayey layers. High subsidence potential, moderate to severe fire hazard, very high shrink-swell potential, low bearing strength. Severe limitations for most urban uses after drainage.	1--Allemands muck, drained	Protected: * SEVERE - high wetness, high potential, severe wetness, severe fire hazard, very high shrink-swell potential of mineral layers, low bearing strength	Protected SEVERE - severe wetness high subsidence potential, nutrient deficiency for some plants	Protected: SEVERE - severe wetness, poor trafficability	Protected: SEVERE - poor traffic supporting capacity, severe wetness, organic surface layers not suitable subgrade material	High subsidence potential severe fire hazard	High subsidence potential, low bearing strength, high water table	Not suitable	0-41" not suitable; 41"+ very poor to not suitable	Not suitable	Not suitable
	2--Allemands peat peat	Protected: SEVERE - high subsidence potential, very high shrink-swell potential of mineral layers, severe wetness, moderate to severe fire hazard, low bearing strength Unprotected: VERY SEVERE - flooding	Protected: SEVERE - severe wetness, high subsidence potential, nutrient deficiency for some plants Unprotected: VERY SEVERE - flooding	Protected: SEVERE - severe wetness, poor trafficability Unprotected: VERY SEVERE - flooding	Protected: SEVERE - poor traffic supporting capacity, severe wetness, organic surface layers not suitable subgrade material	High subsideace potential, moderate to severe fire hazard poor stability of side slopes during initial construction of ditches, very wet	High subsidence potential, very low bearing strength, high water table, very high shrink-swell potential of the mineral layers	Not suitable	Not suitable	Not suitable	Not suitable
E. Organic soils with 5 to 12 feet of herbaceous organic materials over semifluid clayey layers. Very high subsidence potential, severe fire hazard, low bearing strength. Foundation designs for one and two story buildings require piling. Very severe limitations for most urban uses after drainage.	8--Kenner muck	Protected: VERY SEVERE - very high subsidence potential, severe wetness, severe fire hazard, low bearing strength Unprotected: VERY SEVERE - flooding	Protected: SEVERE - very high subsidence potential, severe wetness. Unprotected: VERY SEVERE - flooding	Protected: SEVERE - severe wetness, poor trafficability Unprotected: VERY SEVERE - flooding	Protected: SEVERE - poor traffic supporting capacity, severe wetness, organic layers not suitable subgrade material Unprotected: VERY SEVERE - flooding	Very high subsidence potential, severe fire hazard, poor side slope stability during initial construction of ditches, very wet	Very low bearing strength, very high subsidence potential high water table	Not suitable	Not suitable	Not suitable	Not suitable

*Note: Protected means protected by levees with pumpoff drainage if needed. Unprotected means subject to flooding.

Source: USDA/Soil Conservation Service, 1978.

Table 6-2

SOIL CHARACTERISTICS - PHYSICAL AND CHEMICAL

SOIL AND MAP SYMBOL	DEPTH OF TYPICAL PROFILES (INCHES)	CLASSIFICATION			PERCENTAGE PASSING		LIQUID LIMIT	PLASTICITY INDEX	REACTION (ph)	PERMEABILITY (in/hr)	SHRINK-SWELL POTENTIAL	TOTAL SUBSIDENCE POTENTIAL	SOIL FIRE HAZARD	WETNESS	BURIED LOGS AND STUMPS
		USDA TEXTURE CLASS	UNIFIED	AASHTO	#40 SIEVE (0.4mm)	#200 SIEVE (0.74 mm)									
1 Allemande muck, drained	0 to 25 25 to 68 68 to 144	Muck Clay, mucky clay Silt loam, clay, Very fine sandy loam	Pt MH, OH ML, CH	A-8 A-7-5 A-7-6, A-4, A-6	NA 95-100 85-95	NA 80-100 75-95	- 65 - 90 30 - 75	- 30 - 50 6 - 45	4.0 to 7.8 6.6 to 8.4 6.6 to 8.4	>2.0 <0.06 <0.6	NA Very high High	High	Severe	Wet	Common
2 Allemande peat	0-23 23-55 55-60	Peat Clay, mucky clay Muck	Pt MH, OH Pt	A-8 A-7-5, A-7-6 A-8	NA 95-100 NA	NA 80-100 NA	- 65 - 90 -	- 30 - 50 -	5.1 to 7.8 6.6 to 8.4 7.4 to 8.4	>2.0 <0.06 >2.0	NA Very high NA	High	Moderate to Severe	Very wet	Variable
18 Allemande Variant muck	0 to 4 4 to 112	Muck, peat Clay, mucky clay	Pt MH, OH	A-8 A-7-5, A-7-6	NA 95-100	NA 80-100	- 65 - 90	- 30 - 50	5.1 to 7.8 6.6 to 8.4	>2.0 <0.06	NA Very high	Medium	Slight	Very wet	Variable
4 Barbary soils	0 to 6 6 to 36 36 to 66	Peat or muck Clay Clay	Pt MH MH	A-8 A-7-5 A-7-5	NA 100 100	NA 95 to 100 95 to 100	- 70 - 90 70 - 90	- 35 - 45 35 - 45	5.6 to 7.3 6.6 to 8.4 6.6 to 8.4	>2.0 <0.06 <0.06	NA Very high Very high	Medium	Slight	Very wet	Many
20 Barbary Variant clay, drained	0 to 38 38 to 90 90 to 144	Clay, mucky clay Muck Clay, silt loam	MH, OH Pt CH, ML, MH	A-7-5 A-8 A-7-6, A-4	100 NA 85-95	95-100 NA 75-95	65 - 90 - 30 - 75	30 - 50 - 6 - 45	4.8 to 6.3 6.1 to 8.4 6.1 to 8.4	<0.06 - -	Very high NA Low to high	Medium	None	Wet	Many
17 Commerce silt loam	0 to 8 8 to 41	Silt loam Silty clay loam, silt loam, very fine sandy loam	ML, CL-ML, CL CL, ML	A-4 A-6, A-7-6	100 100	75-100 85-100	<30 32 - 45	NP - 10 11 - 23	6.6 to 7.8 6.6 to 8.4	0.6 - 2.0 0.2 - 0.6	Low Moderate	Low	None	Moderately wet	Few or None
	41 to 72	Very fine sandy loam, Silt loam, silty clay	CL-ML, CL, ML	A-4, A-6, A-7-6	100	75-100	23 - 45	3 - 23 -	6.6 to 8.4 -	0.2 - 2.0	Low -				Few or none
6 Commerce silty clay loam	0 to 6 6 to 72	Silty clay loam Silty clay loam, silt loam	CL CL	A-6, A-7-6 A-6, A-7-6	100 100	90-100 85-100	32 - 50 32 - 45	11 - 25 11 - 23	5.6 to 7.8 6.6 to 8.4	0.2 - 0.6 0.2 - 2.0	Moderate low	Low	None	Moderately wet	Few or none
9 Ijam Variant clay	0 to 40 40 to 60	Clay Mucky clay or clay	MH, CH MH, Pt, OH, ML	A-7-5, A-7-6 A-8, A-7-5	85-100 90-100	80-95 85-95	70 - 90 35 - 100	35 - 55 6 - 55	5.6 to 7.0 7.0 to 8.0	<0.06 0.06 - 2.0	Very high Very high	Low	None	Very wet	Variable
8 Kenner muck	0 to 24 24 to 100	Muck, peat Peat, thin clay strata, muck	Pt Pt, OH	A-8 A-8	NA NA	NA NA	- -	- -	6.1 to 8.4 6.6 to 8.4	>2.0 0.2 - .06	NA NA	Very High	Severe	Very wet	Few or none
13 Sharkey clay	0 to 96	Clay	CH	A-7-6	100	95-100	56 - 85	30 - 50	6.1 to 7.8	<0.06	Very high	Low	None	Wet	Few or none
14 Sharkey silty clay loam	0 to 5 5 to 54	Silty clay loam Clay, silty clay	CL CH	A-6, A-7-6 A-7-6	100 100	95-100 95-100	32 - 50 56 - 85	11 - 25 30 - 50	6.1 to 7.8 7.4 to 8.4	0.2 - .06 <0.06	Moderate Very high	Low	None	Wet	Few or none
3 Sharkey Variant clay	0 to 42 42 to 96	Clay Clay, mucky clay	CH MH, OH	A-7-6 A-7-5	100 90-100	95-100 85-95	56 - 85 65 - 90	30 - 50 30 - 50	6.1 to 7.8 7.4 to 8.4	<0.06 <0.06	Very high Very high	Low	None	Wet	Many
15 Vacherie Complex, gently undulating	0 to 18 18 to 55 55 to 68	Silt loam Clay Silt loam	ML, CL-ML CH ML, CL-ML	A-4 A-7-6 A-4	95-100 100 95-100	65-100 95-100 65-100	<27 51 - 75 <27	NP - 7 26 - 45 NP - 7	5.6 to 8.4 6.6 to 8.4 6.6 to 8.4	0.6 - 2.0 <0.06 0.2 - 0.6	Low Very high Low	Low	None	Moderately wet	Few or none

Note: Based on soils without mineral fill material.
NA = Rating Not Applicable.

Source: USDA/Soil Conservation Service, 1978.

Loamy soils are generally found along the higher ridges of the natural levees, with clayey soils in the lower areas. The organic content of the soil increases with distance from the natural levees. Within the planning area, the soils with higher organic content have a greater potential for subsidence if drained because of compaction and oxidation. The dry organic layers may burn when drained.

The northwestern section of the planning area, extending south to Lake Salvador, is classified as saltwater marsh with the exception of the land adjacent to the natural levees. The saltwater marshes are characterized by high subsidence potential, severe wetness, high shrink-swell potential, low bearing strength, poor trafficability, and severe fire hazard. Kenner Muck is the predominant soil type for this area.

The northeastern section of the planning area, extending south to the junction of Bayou Barataria and Bayou des Familles, consists of mineral soils with medium to low subsidence potential, with the exception of Allemands Peat soils. Most of the year the water table for Allemands Peat soils is near or a few inches above the soil surface.

The soils from the junction of Bayou Barataria and Bayou des Familles and south to immediately north of Grand Isle, through Bayou Rigaud, Chenier Caminada, and West Grand Terre Island, consist of freshwater marshes, saltwater marshes, and swamps. The freshwater marshes are characterized by a high subsidence potential, severe wetness, high shrink-swell potential of mineral layers, low bearing strength, poor trafficability, and severe fire hazard. The saltwater marshes have the same characteristics as the freshwater marshes, with the exception of severe fire hazard, and exhibit an elevated salt content. Medium subsidence potential, severe wetness, very high shrink-swell potential of mineral layers, poor trafficability, and moderate to severe fire hazard characterize the swamp areas.

Chenier Caminada, Elmers Island, Grand Isle and the Grand Terre Islands consist of saltwater marshes and coastal sand beaches. The saltwater marshes exhibit the characteristics identified above. The coastal sand beaches are characterized by high salt content, low organic content, and low subsidence potential.

Future Conditions Without The Project.

Geology, Topography and Soils

The absence of the project will have no impact upon the geologic landforms and the topography or soils in the planning area or surrounding areas.

Analysis of Alternatives.

Conveyance/Collection Systems

As detailed in Chapter 5, the extent of the conveyance system for each of the final alternatives is similar. Conveyance system construction for all alternatives will encounter drainage and shallow excavation problems such as logs and stumps and poor side slope stability. The low bearing strength, high water table, very high shrink-swell potential of mineral layers, and very high subsidence potential of soils will also present construction problems. However, proper procedures can be incorporated into the engineering design and construction of the conveyance facilities to effectively deal with these conditions. No adverse impacts on soils, geology or topography are anticipated from any of the final alternative conveyance systems.

Treatment Plant Sites

Each of the final alternatives incorporate one or more of the six potential wastewater treatment plant sites. The soil types and limitations at each of the possible sites are presented in Table 6-3 and summarized below.

The proposed Kelvin Tract secondary treatment site is located on three types of soils consisting of Allemands peat, which is the most predominant on the site, Barbary Soils and Ijam Variant Clay. With the exception of the Ijam Variant Clay, these soils have severe (where protected) to very severe (where unprotected) limitations. They exhibit a very high shrink-swell potential, medium to very high subsidence potential, severe wetness, slight to severe fire hazard and low bearing strength. These soils, if drained, will consolidate and shrink producing elevations below sea level.

The proposed Timberlane secondary treatment site is located on drained Barbary Variant Clay. This soil is a poorly drained mineral soil that has been protected and drained and has a medium subsidence potential, low bearing strength, and very high shrink-swell potential with severe wetness. For streets and roads, this soil has a poor traffic supporting capacity.

Table 6-3

SOIL CHARACTERISTICS OF FINAL ALTERNATIVE SITES

SITE CHARACTERISTICS	SITES (AND ALTERNATIVES IN WHICH SITE IS UTILIZED)					
	KELVIN TRACT (J)	TIMBERLANE (C,G,I,K)	COUSINS NORTH (A,D,F,J,K)	HERO CUT-OFF (B,E)	U.S. 90 (E,F,G,H,I,K)	CHURCHILL FARMS (D)
SOIL TYPES/% OF SITE COVERAGE	Allemands Peat/80% Barbary/15% Ijam Variant Clay/5%	Barbary Variant/100%	Sharkey Variant Clay/100%	Allemands Muck/85% Barbary/15%	Sharkey Clay/70% Sharkey Variant/30%	Barbary/45% Allemands Peat/40% Kenner Muck/15%
SHRINK-SWELL POTENTIAL	Very High Very High High	Very High	Very High	Very High Very High	Very High Very High	Very High Very High
SUBSIDENCE POTENTIAL	High Medium Low	Medium	Low	High Medium	Low Low	Medium High Very High
WETNESS	Severe Severe Severe	Severe	Severe	Severe Severe	Severe Severe	Severe Severe Severe
FIRE HAZARD IF DRAINED	Moderate-Severe Slight None	None-Slight	None	Severe Slight	None None	Slight Moderate Severe
BEARING STRENGTH	Low Low Low	Low	Low	Low Low	Medium Low	Low Low Low
TRAFFIC SUPPORT CAPACITY	Poor Poor Poor	Poor	Poor	Poor Poor	Poor Poor	Poor Poor Poor

Source: USDA/Soil Conservation Service, 1978.

The proposed Hero Cut-off site is located primarily on Allemands Muck drained soil with the northeastern quarter located on Barbary Soils. These soils have severe (where protected) to very severe (where unprotected) limitations. They exhibit a very high shrink-swell potential, medium to high subsidence potential, severe wetness, low bearing strength, high water table, and slight to severe fire hazard.

The proposed Cousins North site is located on Sharkey Variant Clay soil which is a poorly drained soil type. This soil is characterized by a very high shrink-swell potential, severe wetness and low bearing strength due to semi-fluid sublayers.

The proposed U.S. 90 secondary treatment site is located primarily on Sharkey Clay soils with the southern quarter located on Sharkey Variant Clay. The Sharkey Variant Clay differs from Sharkey Clay in that it has semi-fluid lower layers. Both of these soils exhibit a very high shrink-swell potential, severe wetness and a medium to low bearing strength. These are some of the better soils in the area for general urban use. Most foundation designs for one and two story buildings do not require piling on Sharkey Clay.

The proposed Churchill Farms aquatic treatment site is located on three types of soils, with the northern half of the site on Barbary Soils and the southern half of the site on Allemands Peat and Kenner Muck. These soils have severe (where protected) to very severe (where unprotected) limitations. They exhibit a very high shrink-swell potential, medium to very high subsidence potential, severe wetness, slight to severe fire hazard and low bearing strength.

Special precautions and considerations should be taken into account in the design and construction of the facilities at any of the final six sites to avoid possible future subsidence of the soils.

Prime Agricultural Lands

Those soils which the Soil Conservation Service (1978) considers to be "prime soils" include Commerce Silt Loam, Commerce Silty Clay Loam, Sharkey Clay, Sharkey Silty Clay Loam, and the Vacherie Complex. Of the final sites, only the Cousins North and U.S. 90 sites contain soils classified as prime.

6.2.2 Water Resources

Surface Water.

Water Quality Standards and Discharge Limitations

The Louisiana Department of Natural Resources (DNR) has promulgated general water quality criteria governing all waters of the State of Louisiana. In setting these standards the following parameters were considered: color; aesthetics; floating, suspended and settleable solids; taste and odor; toxic substances; oils and greases; foaming or frothing materials; nutrients; turbidity; and other materials.

The surface waters of the planning area are part of either the Mississippi River Basin or the Barataria Basin. For the portion of the Mississippi River that lies within the boundaries of the planning area, or which is immediately affected by discharges from it, the following water quality criteria apply:

Chlorine	75 mg/l
Sulfate	120 mg/l
DO	5 mg/l
pH	6.5 - 9
TDS	400 mg/l
Temperature	32° C
Bacterial Standard	Standard No. 3 (Public Water Supply).

This length of the river is entirely designated for Secondary Contact Recreation, Propagation of Fish and Wildlife, and Domestic Raw Water Supply uses. Although presently classified as "water quality limited," this length of the river has been recommended to be classified as "effluent limited," which infers that water quality is meeting and will continue to meet applicable standards or that water quality will meet applicable standards after application of the effluent limitations required by the Clean Water Act (Stanley Consultants Inc., 1980).

The water quality criteria and water uses for segments of the Barataria Basin within the planning area are shown in Table 6-4. Two kinds of criteria apply to this basin. One is for closed waters which are encountered in the northern part of the basin and for which the state has established numerical standards for seven criteria. The second set of criteria applies to

Table 6-4

WATER USES AND CRITERIA
(Barataria Basin)

SEGMENT NUMBER	SEGMENT DESCRIPTION	WATER USES*				CRITERIA						
		A	B	C	D	CL (mg/1)	SO_4 (mg/1)	DO (mg/1)	pH RANGE	BAC STD**	TEMP (^oC)	TDS (mg/1)
03	Lake Salvador (Including Lake Cataouatche and Tributaries		X	X		600	100	5.0	6.0 - 8.5	1	32	1320
05	Intracoastal Waterway (East-West) Larose to Mississippi River (Tidal)	X	X	X		N/A	N/A	4.0	6.5 - 9.0	4	35	N/A
07	Bayou Rigolettes - Lake Salvador to Little Lake and Portions of Barataria Waterway (Shellfish) (Tidal)	X	X	X		N/A	N/A	4.0	6.5 - 9.0	4	35	N/A
07	Little Lake (Shellfish) (Tidal)		X	X		N/A	N/A	4.0	6.5 - 9.0	4	35	N/A
07	Barataria Bay (Including Caminada Creole, Hackberry Bay, Bay Baptiste, and Bay Long (Tidal)	X	X	X		N/A	N/A	4.0	6.5 - 9.0	4	35	N/A

* A = Primary Contact Recreation
B = Secondary Contact Recreation
C = Propagation of Fish and Wildlife
D = Domestic Raw Water Supply

**Standard #1: Primary Contact Recreation - Based on a minimum of not less than five samples taken over not more than a 30-day period, the fecal coliform content shall not exceed a log mean of 200/100 ml nor shall more than ten per cent of the total samples during any 30-day period exceed 400/100 ml.

Standard #4: Shellfish Propagation - The monthly total coliform median MPN (Most Probable Number) shall not exceed 70 per 100 ml and not more than ten per cent of the samples ordinarily exceed a MPN of 230/100 ml.

Source: Water Resources Engineers, 1980.

open waters which are also oyster growing areas and for which dissolved oxygen is the only numerically set parameter. All segments in the Barataria Basin were classified as "effluent limited" in the 1980 Water Quality Management Plan (WQMP) (Water Resources Engineers, 1980).

Existing Conditions

The planning area drains into either the Mississippi River or into the Barataria Bay Basin. Drainage is predominantly to the south via pumping stations, or by natural drainage since the land along the river is the highest in the area. The land area on the river side of the man-made levees (batture) drains to the river, while all other runoff eventually finds its way to Barataria Bay.

The dominant bodies of water in the planning area are lakes Cataouatche and Salvador, the Pen, Little Lake, and Barataria and Caminada bays. Lakes Cataouatche and Salvador are shallow estuaries, less than five feet in depth, with a maximum salinity of 1.5 to 2.0 parts per thousand (ppt). The Pen was originally a marsh that was drained and leveed for agricultural use, but is now under water because of subsidence and failure of the levee. Adjacent to the Pen, the average salinities range from 2.2 ppt to 11.0 ppt.

The marshes in the southern part of the planning area, in conjunction with the flat slope of the land, offer little protection against storm surges from the Gulf of Mexico. These two factors, together with the draining of marshland for development, have led to the construction of a complex network of levees, canals and drainage pumps (Figure 6-2). The most significant waterways are bayous Perot, Rigolettes, Segnette, des Familles, Verret and Barataria, the Cousins and Harvey canals, and the Gulf Intracoastal Waterway. Fresh water is transported into the lower Barataria Basin from the Mississippi River via the Harvey Canal to Bayou Barataria and the Gulf Intracoastal Waterway. The waters south of this canal are brackish.

The Barataria Bay Waterway is another major waterway which connects the Gulf Intracoastal Waterway, the Port of New Orleans, and the Gulf of Mexico. The Barataria Bay Waterway flows south through Barataria Bay to the Gulf.

Water quality samples have been collected for the planning area stream segments by the EPA, U.S. Geological Survey, U.S. Army Corps of Engineers, and the Louisiana departments of Wildlife and Fisheries and Health and Human Resources. Findings based on this sampling are summarized below.

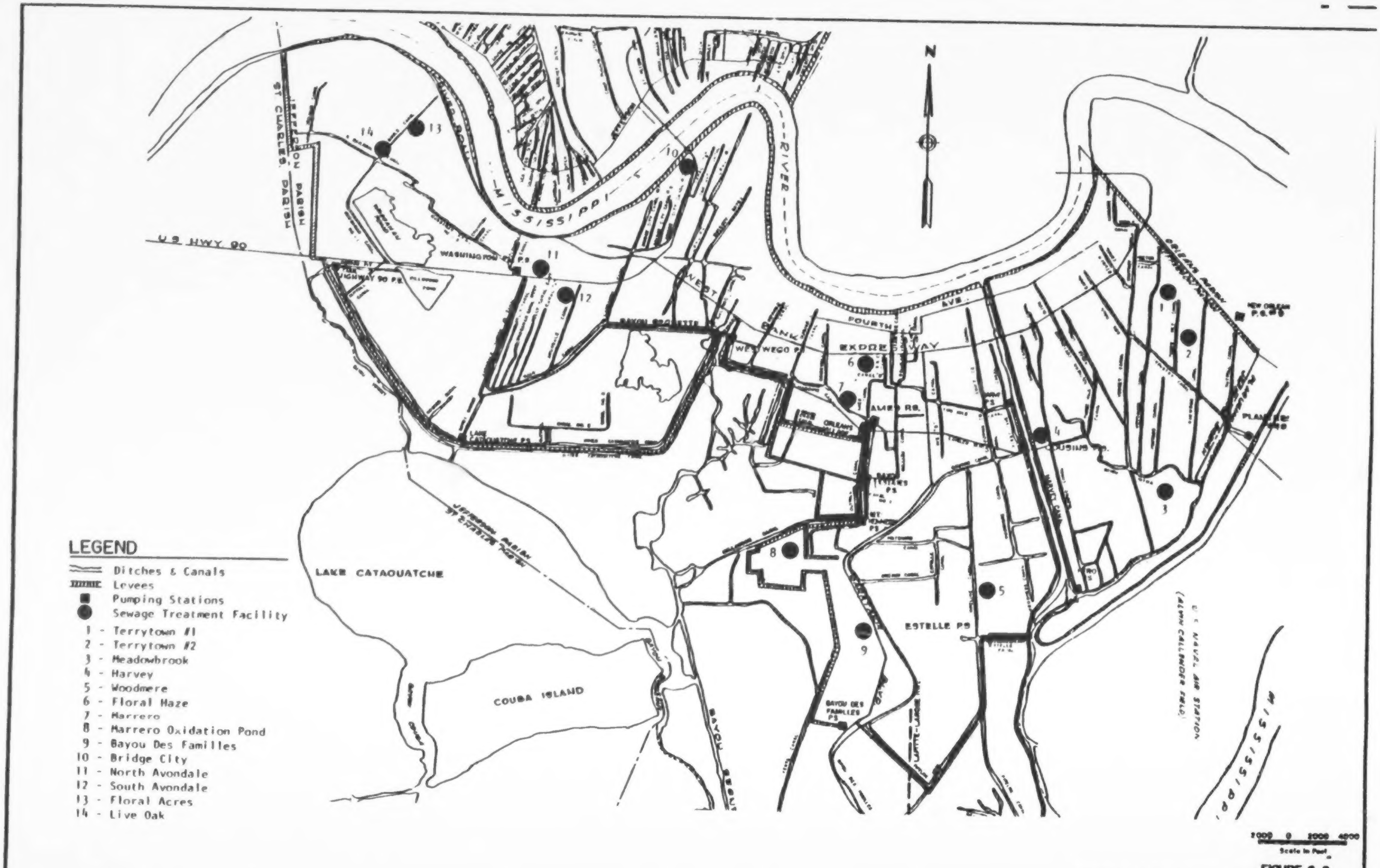

LEGEND
Ditches & Canals
Levees
Pumping Stations
Sewage Treatment Facility
1 - Terrytown #1
2 - Terrytown #2
3 - Meadowbrook
4 - Harvey
5 - Woodmere
6 - Floral Haze
7 - Marrero
8 - Marrero Oxidation Pond
9 - Bayou Des Familles
10 - Bridge City
11 - North Avondale
12 - South Avondale
13 - Floral Acres
14 - Live Oak
N
MISSISSIPPI RIVER
MISSISSIPPI
ST CHARLES PARISH
JEFFERSON PARISH
U S HWY 90
WASHINGTON P.S.
HIGHWAY 90 P.S.
WEST BANK EXPRESSWAY
FOURTH AVE.
WESTWEGO P.S.
BAYOU SEGNETTE
AMES RD.
COUSINS P.S.
HARVEY CANAL
ORLEANS PARISH
NEW ORLEANS P.S.
ESTELLE P.S.
BAYOU DES FAMILLES P.S.
LAFITTE-LAROSE HWY
LAKE CATAOUATCHE
COUBA ISLAND
BAYOU SEGNETTE
U.S. NAVAL AIR STATION
(ALVIN CALLENDER FIELD)
2000 0 2000 4000
Scale in Feet

FIGURE 6-2

MAP PROVIDED BY, ROY F. WESTON, INC.

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JEFFERSON PARISH (WEST BANK)
201 FACILITIES PLAN EIS

CANAL SYSTEM

In the Barataria Basin, water is transported and discharged into the backwaters through natural bodies such as bayous Segnette and des Allemands, or through drainage canals in the populated portion of the planning area such as Cousins and Harvey canals. Data collected at several stations located on Bayou Segnette indicated that DO standards were exceeded. Allowable limits for total dissolved solids and fecal coliforms were also often exceeded. The chloride criterion was repeatedly exceeded, pointing to saltwater intrusion. Elevated chloride concentrations indicated that saltwater intrusion occurred in the lower reaches of the bayou. The water quality in Bayou des Allemands is generally good, with high DO levels and only moderate levels of BOD_5 and low nutrient levels. Data for the Gulf Intracoastal Waterway from Bayou Perot west to Bayou Lafourche show high DO levels and moderate levels of BOD_5 and nutrients.

Stormwater from various portions of the West Bank population centers is removed through numerous drainage canals and some bayous. The canals also serve as discharge points for municipal and industrial wastewater. During low flow conditions the source of water in the canals is primarily from waste discharges. The results of sampling revealed that the fecal coliform levels consistently exceeded the State Standard #1. The level of BOD was rather high with the exception of the Crown Point station. In Cousins Canal and at Crown Point, the ratio of COD/BOD indicated that concentrations of chemically oxidizable materials were above the naturally occurring level. In Bayou Segnette, a more natural ratio prevailed. The BOD and COD data indicated high probability of low DO levels in the above waterways. No unusually high levels of metals were observed.

In the Mississippi River, monitoring stations are located upriver of Jefferson Parish at Luling and downstream from the Jefferson Parish line at Violet and Belle Chasse. Available data from the past ten years indicated the following major water quality concerns:

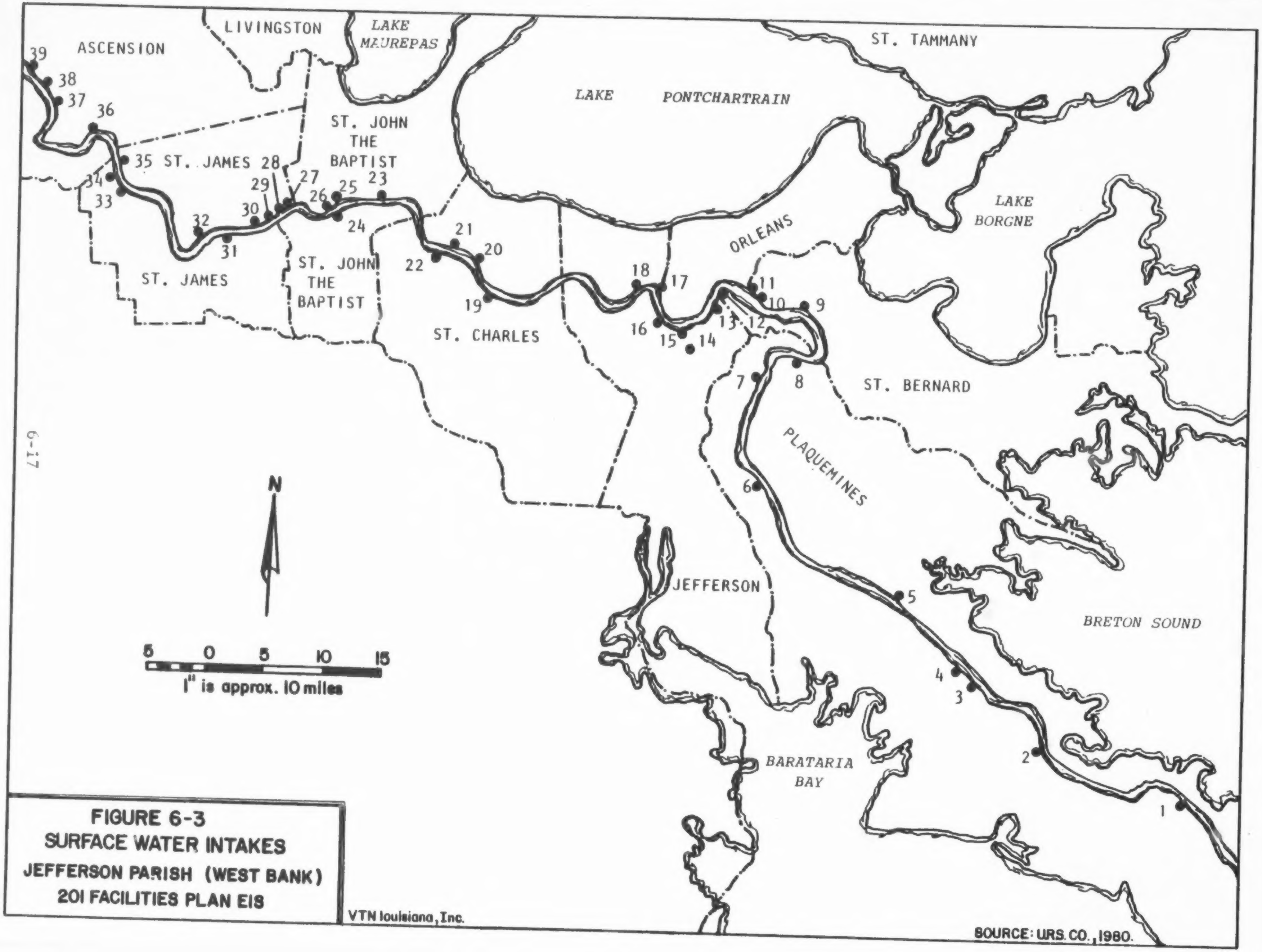
- † Phenol has been a major problem. The maximum allowable concentration of phenol is recommended to be one microgram per liter (ug/l) in drinking water (U.S. Environmental Protection Agency, 1976). Although this standard applies after water treatment, and samples were taken prior to treatment, phenols warrant continued monitoring.
- † Total and fecal coliform concentrations have consistently exceeded criteria and do not appear to be decreasing. Discussions with the State

regulatory personnel indicated that high coliform concentrations are attributable in part to heavy barge and ship traffic.

- † Lead, cadmium, and cyanide concentrations have exceeded recommended standards.
- † Temperature, DO, pH, TDS, chloride, sulfate, mercury, and selenium concentrations have infrequently exceeded recommended standards.
- † The segment of the Mississippi River below the Huey P. Long Bridge has experienced elevated concentrations of chloride, total dissolved solids, and sulfate during the past three years; however, no trends were detected. These violations may relate to the natural intrusion of brackish waters from the Gulf of Mexico and coastal bays into the lower reaches of the river.
- † Silver and DDT were not observed to exceed recommended standards. The number of samples for these two parameters was very small and they warrant continued monitoring.
- † Taste and odor problems in drinking water from the Mississippi River have been reported. Ship traffic and industrial point source discharges appear to be the primary cause.
- † The "water quality limited" designation of this portion of the river is largely a result of industrial discharges. However, the large volume of flow appears to keep problems to a minimum.

Regarding public water supply, water intakes on the Mississippi River in the southeastern portion of Louisiana are indicated on Figure 6-3. Five are located in Jefferson Parish. Characteristics of these systems are listed in Table 6-5.

On the subject of flood hazard areas, floodplains are defined as lowlands and the relatively flat areas adjoining inland and coastal waters. The 100-year floodplain is defined as the area subject to a one per cent or greater chance of flooding in any given year. The 500-year floodplain is defined as the area subject to a 0.2 per cent or greater chance of flooding in any given year. Floodplains are delineated as flood hazard areas on maps prepared by the U.S. Department of Housing and Urban Development (HUD). Approximately 70 per cent of the planning area falls within the 100-year floodplain. This area is primarily concentrated in the southern portions of the planning area. Areas outside the 100-year floodplain can be generally described as follows:


LIVINGSTON
LAKE MAUREPAS
ST. TAMMANY
ASCENSION
LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST
ST. JAMES
ST. JOHN THE BAPTIST
ST. JAMES
LAKE BORGNE
ORLEANS
ST. CHARLES
ST. BERNARD
PLAQUEMINES
JEFFERSON
BRETON SOUND
BARATARIA BAY
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4
3
2
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5 0 5 10 15
1" is approx. 10 miles

FIGURE 6-3
SURFACE WATER INTAKES
JEFFERSON PARISH (WEST BANK)
201 FACILITIES PLAN EIS

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SOURCE: URS CO., 1980.

Table 6-5

MISSISSIPPI RIVER SURFACE WATER INTAKES IN JEFFERSON PARISH

NO.	SYSTEM AND NAME OF RESPONSIBLE AGENCY	COMMUNITIES SERVED	WATER SOURCES	QUANTITY (MGD)	APPROXIMATE NUMBER OF CUSTOMERS
13	Gretna	Gretna	96.7 AHP*	3.700	27,000
14	Louisiana Gas Service Company	Harvey	Surface	0.212	2,340
15	District 2, Jefferson Parish West Bank	Jefferson Parish on West Bank of Mississippi River	99.1 AHP	8.100	45,400
16	Westwego	Westwego	101.5 AHP	2.200	15,000
17	New Orleans Sewerage & Water Board's Carollton Plant	New Orleans	104.7 AHP	130.078	663,850
18	District 1, Jefferson Parish East Bank	Jefferson Parish on East Bank of Mississippi River	105.4 AHP	22.800	200,000

Source: U.S. Army Corps of Engineers, 1975.

*Indicates number of miles above Head of Passes on the Mississippi River.

- † The general area extending westward from the city limits of Westwego and bounded on the south by U.S. Highway 90 and on the north by the Mississippi River levee.
- † An area approximately 8,000 feet wide extending east of the city limits of Westwego and along the Mississippi River levee to the city limits of Gretna.
- † A portion of land approximately 6,000 feet wide and 14,000 feet long extending southward from the Mississippi River levee and approximately 4,000 feet eastward from the city limits of Westwego.
- † An area adjacent and west of the city limits of Gretna and south of the Mississippi River levee approximately 6,000 feet wide by 14,000 feet long.
- † An area adjacent and east of the city limits of Gretna and south of the Mississippi River levee approximately 4,000 feet wide and 10,000 feet long.

Areas that fall within the 100-year floodplain can be developed as long as special flood-proofing of improvements is done in accordance with the flood ordinance adopted in Jefferson Parish. This is required in order to maintain eligibility in the federally subsidized flood insurance program for all citizens in the parish.

Presidential Executive Order 11988 for the protection of floodplains requires that projects utilizing federal assistance avoid direct and/or indirect support of development in floodplain areas. Where floodplains cannot be avoided, all practicable measures to avoid harm must be used.

Future Conditions Without the Project

The surface waters and water quality of the planning area exhibit a variety of problems related to the discharge of municipal and industrial wastewater. Existing water quality problems in the Barataria Basin include saltwater intrusion, eutrophication (Bahr and Hebrand, 1976), and loss of natural habitat and nursery grounds for aquatic life, as well as effluent-related bacterial and chemical contamination of basin waters. Chapter 5, Section 5.1.1, discusses the amount of pollution that would be added to area streams should the No Action alternative be implemented in the planning area.

Analysis of Alternatives

All effluents from the proposed wastewater treatment facilities will discharge either into the Mississippi River or Barataria Basin. All municipal wastewater discharges into the Mississippi River from the ten final alternatives considered in this analysis will be treated to at least a secondary level, which will remove up to 90 per cent of all organic matter in the sewage, in compliance with federal standards requiring that all municipal discharges achieve secondary treatment status by 1983. According to the state Water Quality Management Plan, the segment of the Mississippi River within Jefferson Parish is currently classified as "water quality limited." This means that water in this segment does not meet applicable water quality standards and is not expected to meet these standards even after application of the proposed secondary treatment effluent limitations. Based on this criterion, the secondary wastewater effluents of the various alternatives will have negligible environmental impacts on the water quality of this segment of the Mississippi River. The various types of advanced treatment of the alternatives studied included mechanical, biological, and aquatic processes. Aquatic treatment applications have the highest potential for adversely affecting surface water quality. Advanced treatment of municipal wastewater by aquatic application utilizes marshes for the disposal of municipal wastes that have already been subjected to secondary treatment. Alternative D is the only alternative that utilizes aquatic treatment at the Churchill Farms site in Zone I. Presently, there are insufficient data to assess the capacity of local marshes to assimilate municipal wastewater through aquatic treatment. In general, the marsh vegetation has a capacity for reducing such wastewater constituents as nitrogen, biochemical oxygen demand, and pathogenic organisms. This reducing capacity of the marshes can be expected to continue during the winter months when most marsh plants die, but phytoplankton growth increases. Marsh sediments have the ability to retain certain wastewater constituents such as heavy metals and certain toxic organics. The long range effect and ability of the marshes to assimilate secondarily treated domestic wastewater is not well known at the present time. In terms of effluent discharge outfall, all alternatives that use the Mississippi River as the receiving water body pose no adverse environmental impacts. Alternative D does, however, pose potential adverse impacts due to the possibility of future contamination of adjacent marshes by the aquatic treatment application. The assessment of the force mains and pump stations is predicated on the assumption that the entire conveyance system, which may vary to meet certain water conditions, meets or exceeds the State Board of Health, the local health authority, and the designated engineering review agency standards and policies.

The spatial separation of wastewater outfall locations and existing water supply intakes, along with the magnitude of Mississippi River flow rates, will allow for dilution of effluents to such a degree that the impact on water quality at intake points will be minimal. The proposed effluent discharge alternatives pose no adverse impacts for existing water intakes within the planning area.

All sewer treatment plant sites were assessed in terms of flood potential. This was done utilizing the flood hazard boundary map of Jefferson Parish published by the U.S. Department of Housing and Urban Development, Federal Insurance Administration. For the various flood zone designations used in the following site assessments, see Table 6-6.

† The Kelvin Tract is located within the limits of the 100-year flood and 500-year flood. A small portion at the southeast corner of the site is located in Zone A-4, with a base flood elevation of 4.0 feet recorded on October 13, 1971. The rest of the area is located on Zone B where depths are less than one foot.

† The Timberlane site is located in an area established by the FIA as Zone A-1, an area of the 100-year flood. The base flood elevation was recorded at 1.5 feet on October 13, 1971.

† The Cousins North site is located in an area established by the FIA as Zone A-4; elevation was recorded at 1.5 feet on December 26, 1975.

† The Hero Cut-off site is located in an area established by the FIA as Zone A-4, an area of the 100-year flood. The base flood elevation was established at 3.5 feet on July 9, 1976.

† The Churchill Farms aquatic treatment site is located in an area established by the FIA as Zone A-4, an area of 100-year flood occurrence. The base flood elevation was recorded at 4.0 feet on October 13, 1971.

† The U.S. 90 site is not located within the 100-year floodplain (Zone B).

As indicated above, all sites except U.S. 90 fall within the 100-year floodplain. Wastewater treatment facilities would have to be constructed in accordance

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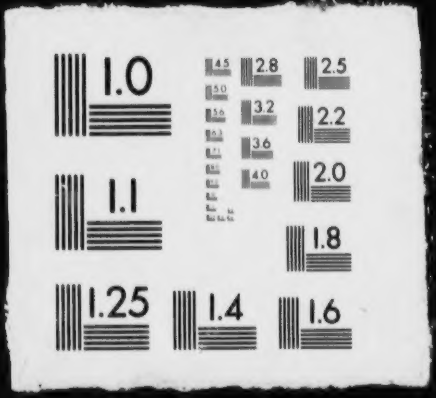
1.0
4.5
2.8
2.5
5.0
3.2
5.6
2.2
6.3
3.6
7.1
8.0
4.0
2.0
1.1
1.8
1.25
1.4
1.6

Table 6-6

FLOOD HAZARD ZONE DEFINITIONS

ZONE	DESCRIPTION
A	Areas of 100-year flood also referred to as "base flood." This is the intermediate level of flooding that the insurance program is geared to protect against. No flood hazard factors are determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet. No flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet. No flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined. The hazard factors reflect the degree of flood risk in the area. The risk zones are used by insurance agents for the proper rating of new properties to be insured under the program.
A-99	Areas of 100-year flood to be protected by flood protection system under construction. Flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood.
C	Areas of minimal flooding.
D	Areas of undetermined, but possible flooding hazards.

Source: U.S. Department of HUD, 1976.

with the building requirements of the flood ordinance of Jefferson Parish in order to minimize possible future flood damage. With the exception of the Churchill Farms site, the construction of these facilities at the various sites is expected to have negligible impact on the floodplains. Without special efforts to prevent flooding and subsequent contamination of adjacent marshes, the proposed aquatic treatment facility at Churchill Farms could pose an adverse environmental impact. Secondary impacts on the surface hydrology would require a separate study of existing drainage conditions in order to propose improvements to mitigate the resulting drainage conditions. The area required for aquatic treatment, in itself, increases the potential for contamination to adjacent areas. The utilization of this site for an aquatic treatment facility would reduce the holding potential of the existing drainage area in an amount approximately equal to the aquatic treatment site. Additional drainage improvement would most likely be made to compensate for this deficiency and would increase the rate of flow during both flood and non-flood periods in areas to the south of the site, which presently consist of uninhabited marshes. Special efforts should be taken in isolating the aquatic treatment site from the surrounding natural marshes in order to minimize contamination through flooding.

Groundwater.

Existing Conditions

The New Orleans area has five aquifer formations: shallow aquifers (point bars and channel deposits); and the 200-foot, 400-foot, 700-foot, and 1,200-foot sands. To one degree or another, all of these aquifers, with the exception of the 1,200-foot sands, are located within the planning area. The most important and predominant aquifer in this group is the 700-foot sand. None of these aquifers are used as a source of potable water because of their poor quality.

The shallow aquifers occur at depths varying from near-surface sands to 150 feet or more. They fall under two general categories: near-surface sands, which are of little importance because of their limited size, capacity, and poor water quality; and point bars and distributary channel sands, which can occur anywhere between 10 feet to 150 feet in depth. These aquifers are very susceptible to saltwater intrusion because of their limited size and proximity to underlying saltwater. The water quality of these aquifers is poor; they are very hard and contain high levels of iron.

The 200-foot sand formation underlies a large portion of the planning area. It is a poorly defined and irregular aquifer, and is considered a zone of water-bearing sands rather than a single sand formation. With the exception of the northwest corner of Jefferson Parish, and possibly the eastern side of Lake Cataouatche, no fresh water is found in this sand.

The 400-foot aquifer underlies all of the northern section of the planning area, except for a small portion in the general area around Gretna and Harvey. This aquifer is not of sufficient thickness to be used as a dependable water source. The thickest section of this aquifer occurs in the northern part of the planning area, where it varies between 95 and 172 feet in thickness.

The principal and most productive aquifer in the New Orleans region is, and has been, the 700-foot sand. The water quality in this aquifer varies from fresh, soft and low in iron content towards the northern section of the aquifer, to salty and hard towards the south. The only portions of the planning area where the chloride content is less than 250 ppm are in the Bridge City and Westwego areas. The depth of the 700-foot sands in the planning area varies between 650 and 800 feet below mean sea level. Because of the high concentration of chloride and the peculiar, though harmless, yellow coloration of the water, this aquifer has never been considered satisfactory for public supply. Figures 6-4 and 6-5 show the general geographical location of the aquifers within the planning area.

Future Conditions Without the Project

The existing aquifers are not presently used for water supply in the planning area. Increasingly large areas of development for residential, industrial and commercial uses will decrease filtration of precipitation and thereby reduce recharge of the surface aquifers. Due to the poor quality and the lack of demand for these resources, the potential supplies will probably not be utilized in the future. Although contamination of the shallow aquifers will continue to occur, this is not considered a significant impact due to the naturally poor quality of these sources.

Analysis of Alternatives

There are no water wells located on any of the six sites proposed in the final alternatives. All of the sites, except the U.S. 90 site, are located over the 200-foot sands. The Timberlane, Cousins North, Hero Cut-off, and

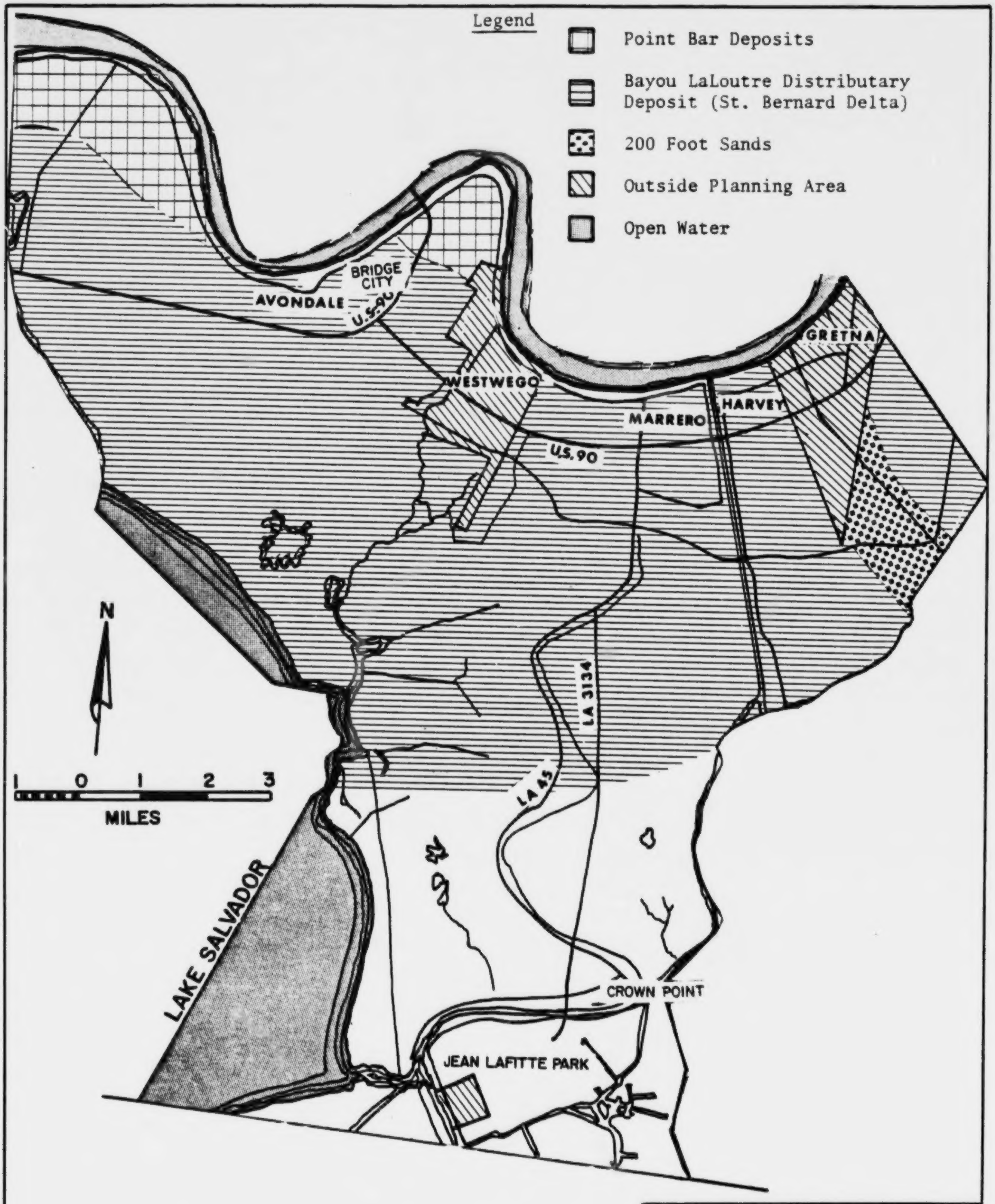
Legend
▢ Point Bar Deposits
▤ Bayou LaLoutre Distributary Deposit (St. Bernard Delta)
▩ 200 Foot Sands
▧ Outside Planning Area
▦ Open Water
BRIDGE CITY
AVONDALE
U.S. 90
WESTWEGO
GRETNA
HARVEY
MARRERO
U.S. 90
N
1 0 1 2 3
MILES
LA 3134
LA 45
LAKE SALVADOR
CROWN POINT
JEAN LAFITTE PARK

FIGURE 6-4
SHALLOW AQUIFERS
JEFFERSON PARISH (WEST BANK)
201 FACILITIES PLAN EIS

Sources: Rollo, 1966 and Caldwell et al., 1966.

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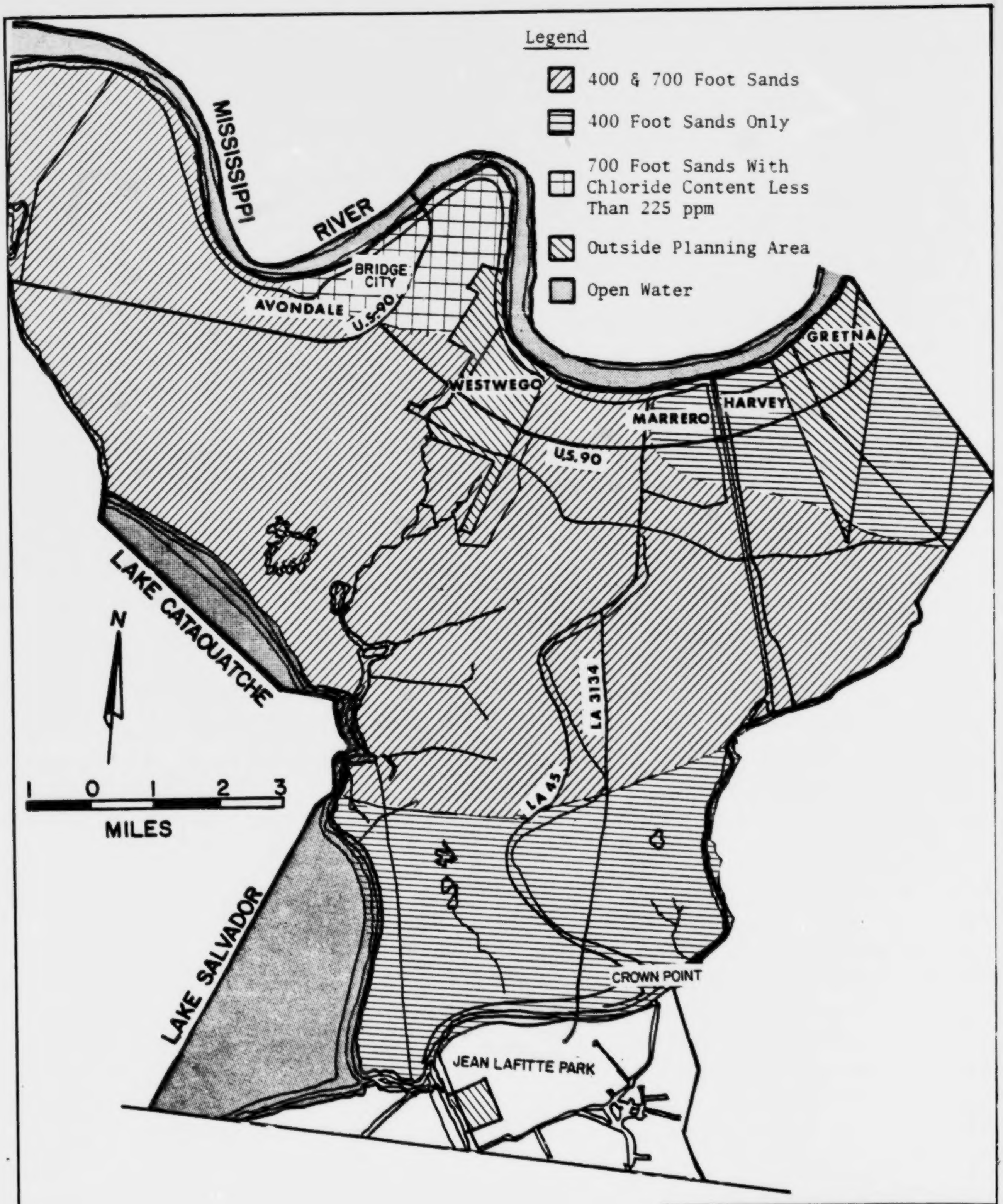
Legend
▨ 400 & 700 Foot Sands
▤ 400 Foot Sands Only
▦ 700 Foot Sands With Chloride Content Less Than 225 ppm
▧ Outside Planning Area
▩ Open Water
MISSISSIPPI
RIVER
BRIDGE CITY
AVONDALE
U.S. 90
WESTWEGO
GRETNA
HARVEY
MARRERO
U.S. 90
LAKE CATAOUATCHE
N
1 0 1 2 3
MILES
LA 3134
LA 45
LAKE SALVADOR
CROWN POINT
JEAN LAFITTE PARK

Sources: Rollo, 1966 and Caldwell *et al*., 1966.

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FIGURE 6-5
400- AND 700-FOOT SANDS
JEFFERSON PARISH (WEST BANK)
201 FACILITIES PLAN EIS

Churchill Farms sites are located over the 400-foot sands, with the Timberlane, Cousins North, and Hero Cut-off sites additionally located over the 700-foot sands. The U.S. 90 site is situated over the point bar aquifer closest to the Mississippi River.

Due to a combination of factors, including poor water quality and limited thickness, none of these aquifers are presently used for water supply or are planned for use in the future.

The conveyance system proposed for each of the alternatives would traverse over several, if not all, of the existing aquifers irrespective of which alternative is implemented. None of the existing aquifers are currently used for water supply and the conveyance system would not pose a threat to any aquifer. Therefore, none of the final alternatives are expected to have an adverse impact on groundwater resources.

6.2.3 Air Quality

Existing Conditions.

Air Quality Standards

The Clean Air Act Amendments of 1977 provide for the classification and control of pollutants in both urban and rural areas. The National Ambient Air Quality Standards (NAAQS) established by EPA for various pollutants are summarized in Table 6-7. The primary standards were established for the protection of human health, while the secondary standards are for the protection of public welfare. These standards may not be exceeded more than once a year except for those that are defined as an annual average. The hydrocarbon figure is considered a guideline rather than a specific standard, since the health effects of non-methane hydrocarbons result from their combination with nitrogen dioxide to form irritating photochemical oxidants. The Clean Air Act requires each state to submit a State Implementation Plan (SIP) to EPA, including, among other things, measures necessary to attain and maintain the ambient standards. In Louisiana, the responsible agency is the Environmental Control Commission under the Department of Natural Resources (Air Division).

Ambient Air Quality

Air Quality Region 106, which includes the planning area, is presently a non-attainment area (i.e., standards are exceeded more than once a year) for

Table 6-7

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

POLLUTANT	PERIOD OF MEASUREMENT	PRIMARY STANDARD		SECONDARY STANDARD	
		ug/m^{3*}	ppm*	ug/m^{3}	ppm
Total Suspended Particulates (TSP)	Year**	75	-	60	-
	24 Hours	260	-	150	-
	Quarterly	1.5	-	-	-
Sulfur Dioxide (SO_2)	Year	80	0.03	60	-
	24 Hours	365	0.14	260	-
	3 Hours	-	-	1,300	0.50
Carbon Monoxide (CO)	8 Hours	10,000	9	10,000	9
	1 Hour	40,000	35	40,000	35
Hydrocarbons (HC) (Non-methane)	3 Hours (6 AM - 9 AM)	160	0.24	160	0.24
Photochemical Oxidants (O_x)	1 Hour	160	0.08	160	0.08
Nitrogen Dioxide (NO_2)	Year	100	0.05	100	0.05
Lead (PbS)	Quarterly	1.5	-	-	-

Source: Louisiana Air Control Commission, 1979.

photochemical oxidants. This designation can be based on ambient air sampling or estimates on loadings from known sources of photochemical oxidants. These oxidants are formed when ozone reacts with hydrocarbons and nitrogen oxides in the presence of sunlight.

The Louisiana SIP has a station in Harvey that measures ambient levels of criteria pollutants. However, it was closed in mid-1979. While in operation, the Harvey facility was a non-continuous monitoring station that measured ambient concentrations of total suspended particulates (TSP), sulfur dioxide (SO_2) and nitrogen dioxide (NO_2). Based upon monitoring data from this station (Louisiana Air Control Commission, 1978), it appears that for the period from January 1978 through July 1979 the planning area was in attainment of the NAAQS. The only recorded exceptions to this were on March 15, 1978 and on November 4, 1978 when the secondary standard for TSP was exceeded.

The closest continuous monitoring station for ozone emissions (and thus photochemical oxidant levels) is the Algiers Pumping Station in New Orleans. Monitoring data from this station indicate that the primary and secondary standards for ozone were equalled or exceeded for 34 days within the period from January 1979 to November 1979.

Control Strategies

The SIP revisions dealing with ozone emission levels in Jefferson Parish included anticipated reduction of hydrocarbons, the emission points the Air Control Division expects to abate, and the facilities from which hydrocarbon emissions reductions are to be obtained. The SIP anticipated a 47.1 per cent reduction in hydrocarbon emissions for Jefferson Parish by 1982, the largest reduction in the state. Most of these reductions are expected to come from industries in the West Bank area.

Future Conditions Without the Project. Future development on the West Bank of Jefferson Parish would not result in significant adverse emissions impacts, provided that the industry-related emissions are reduced in accordance with the SIP. Where existing wastewater facilities produce odor impacts in the planning area as a result of overloading and maintenance problems, these impacts would continue and worsen as development continues.

Analysis of Alternatives. All of the final alternatives would have short-term adverse impacts from fugitive dust and equipment exhaust emissions during construction, and potential long-term impacts from odors depending upon proper operation of the wastewater treatment processes. Where existing wastewater facilities are responsible for odor impacts, beneficial impacts would occur through replacing facilities with one or more regional plants. Fugitive dust (particulate matter) would be emitted from exposed soil during construction for any of the proposed alternatives. However, due to the high moisture content of the soils, which reduces the possibility of particles becoming airborne, such emissions should not be significant.

Based on soil moisture content, as reflected in the region's Precipitation Evaporation Index and other factors, a fugitive dust emission factor (tons/acre/month) for the planning area was developed. All results of fugitive dust emissions calculations consider total potential production without the use of any mitigative measures. Daily fugitive dust production based on 1,000 feet per day of force main construction is the same for all conveyance system alternatives (141 lb./day or 1.86 cu. ft./day). Due to the narrow range of total interceptor length for all alternatives, the duration of interceptor construction ranges from 11 to 12.42 months. Treatment plant sites may represent locally significant sources of dust. The yearly dust production per alternative was evaluated in terms of the parish's total suspended particulates emissions derived from the emissions inventory data. The total dust production and its percentage of the total parish particulate emissions are shown in Table 6-8. From this, Alternative D (aquatic treatment at Churchill Farms) will generate the least amount of dust. In all cases, the duration of treatment plant construction was assumed to be 24 months. Daily dust for all alternatives ranges from 1,180 to 2,119 pounds, which comprises 0.77 to 1.40 per cent of total parish emissions. This impact on regional air quality is insignificant.

6.2.4 Sound Quality

Existing Conditions. The Noise Control Act of 1972 established a national policy of protection of the public health and welfare with respect to noise in the human environment. In accordance with this act, EPA has established noise levels requisite to protect public health and welfare with an adequate margin of safety. Two noise descriptors have been selected by EPA as the preferred means to describe the effects of environmental noise. The equivalent sound

Table 6-8

AIR QUALITY IMPACTS
(Dust Generation)

ALTERNATIVE	DAILY DUST GENERATION (FIRST YEAR) (lb/day)	TOTAL DUST PRODUCTION 1st yr/2nd yr (tons)	PER CENT OF TOTAL PARISH PARTICULATE EMISSIONS (FIRST YEAR)
A	1481	177/161	0.97
B	1248	149/133	0.82
C	1481	177/161	0.98
D	1180	140/125	0.77
E	1802	216/199	1.19
F	1781	213/197	1.17
G	1760	211/194	1.16
H	1481	177/161	0.97
I	1658	200/182	1.10
J	2049	245/229	1.35
K	2119	254/237	1.40
L (No Action)	0	0	0.00

Source: VTN Analysis, 1981.

level, $L_{eq(24)}$, describes the steady noise level over a 24-hour period that is equivalent in terms of total sound energy to time varying noise levels during the same time period. The day-night sound level, L_{dn}, is defined as the equivalent noise level during a 24-hour period with a 10 decible (dBA) penalty applied to the nighttime L_{eq} to account for the increased annoyance from noise during the hours between 10:00 p.m. to 7:00 a.m. Table 6-9 lists the general noise level standards established by the EPA.

Existing sources of significant noise levels in the planning area include: traffic on highways, localized construction activities, and overflights by aircraft using area airports. Ambient noise level information for the planning area is generally lacking. However, during the preparation of the West Bank Expressway EIS (U.S. Department of Transportation, 1977) ambient noise levels were measured at 42 sites along the expressway route. Noise levels ranged from 59 to 75 dBA. The West Bank Expressway, which is in the process of being reconstructed, travels in an east-west direction through the more densely populated portion of the planning area.

An EIS prepared on the Bayou des Familles Development Corporation Flood Protection Levee for the U.S. Army Corps of Engineers (VTN Louisiana, Inc., 1975) indicates relatively low ambient noise levels (10-30 dBA) in the less developed, southern portion of the West Bank. Noise levels along Louisiana Highway 45, a moderately travelled north-south thoroughfare, were estimated to be 60-80 dBA. For comparative purposes, Table 6-10 identifies a general range of outdoor noise levels under various conditions.

Future Conditions Without the Project. For the No Action alternative, ambient noise levels for the West Bank would not be affected because construction related to the other final alternatives would not take place.

Analysis of Alternatives. Construction activities related to all final alternatives would result in the exposure of a large portion of the West Bank population to construction noise impacts. Construction activities would affect all existing plant sites (during construction of pumping stations plus demolition and salvage of facilities), new pumping station and treatment plant sites, and sewer rights-of-way.

Adverse noise impacts related to force main construction are a function of the total length of sewer that would pass through or near residential and commercial areas. Noise levels produced by construction equipment would vary with

Table 6-9

SUMMARY OF NOISE LEVELS REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY

EFFECT	NOISE LEVEL	AREAS
Hearing Loss	$L_{eq(24)}$ <70 dBA	All areas
Outdoor activity interference and annoyance	L_{dn} <55 dBA	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use
	$L_{eq(24)}$ <55 dBA	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	L_{dn} <45 dBA	Indoor residential areas
	$L_{eq(24)}$ <45 dBA	Other indoor areas with human activities such as schools, etc.

Source: U.S. Environmental Protection Agency, 1974.

Table 6-10

AVERAGE SINGLE NUMBER SOUND LEVELS FOR VARIOUS OUTDOOR NOISES (dBA)

OUTDOOR NOISES	dBA
Leaves rustling	10-15
Bird call	40-45
Quiet residential street	40-52
150-to 200 ft. from dense traffic	55-70
Edge of highway with dense traffic	70-85
Car at 65 mph at 25 ft.	75-80
Propeller plane at 1,000 ft.	75-84
Pneumatic drill at 50 ft.	80-85
Noisy street	84-94
Under elevated train	88-97
Jet plane at 1,000 ft.	100-105
Jet takeoff at 200 ft.	120-125
50-hp siren at 100 ft.	130-135

Source: U.S. Environmental Protection Agency, 1974.

the number and type of equipment in use, and the distance from areas which would be affected. Based on a typical mix of sewer construction equipment, the noise levels indicated in Table 6-11 can be expected during construction of any of the proposed force main sewers. The day-night noise levels presented in the table represent a combination of typical residential area noise levels and construction noise levels that can be expected in the front yards of houses facing construction (L_{dn} @ 50 feet), backyards of houses facing construction (L_{dn} @ 90 feet), and the point at which the construction noise levels would blend with ambient levels (L_{dn} @ 570 feet).

Construction noise can be expected to exceed EPA criteria for protection of health and welfare within a distance of approximately 1½ blocks of the equipment. These projected adverse impacts are, however, short-term and any one house or business could be expected to be impacted for two to three days. Noise control techniques such as limiting construction to normal work-day hours and employing mufflers on machinery will lessen the severity of noise impacts.

Those alternatives with more construction in residential or commercial areas would affect more people and, therefore, have greater adverse impacts. Table 6-12 indicates the total length of force main construction affecting residential areas for each alternative.

The nearest residential area to any of the potential sites for new treatment plants is greater than 1,000 feet. Therefore, noise from treatment plant construction should not affect these areas. This distance, combined with proper acoustical design, will ensure that noise generated by operation of the treatment plants is within acceptable levels. Proper acoustical construction materials would also be incorporated in pumping station design to minimize noise due to operation. Proper landscaping, in addition, can work to minimize noise impacts.

6.2.5 Biological Resources

Aquatic Communities.

Existing Conditions

Jefferson Parish lies within Hydrological Unit IV of the Louisiana coastal marshes (Chabrack, 1972a). This unit, which includes the Barataria Basin, lies entirely within the inactive delta zone of the Mississippi River and runs from

Table 6-11

CONSTRUCTION NOISE LEVELS

SOURCE	L_{eq} at 50 ft. (dBA)	L_{dn} FOR RESIDENTIAL AREAS (dBA) @ 50 ft.	@ 90 ft.	@ 570 ft.
Excavation	84	80	75	55
Construction	84	81	76	55
Restoration	89	87	82	56

Source: Milwaukee Metropolitan Sewerage District, 1980.

Table 6-12

TOTAL LENGTH OF FORCE MAIN CONSTRUCTION AFFECTING RESIDENTIAL AREAS

ALTERNATIVE	LENGTH (ft.)
A	72,930
B	75,930
C	96,480
D	72,930
E	78,130
F	75,760
G	93,310
H	87,470
I	96,250
J	67,830
K	82,510
L(No Action)	0

Source: VTN Analysis, 1981.

the Mississippi River southward to the Gulf of Mexico. The Barataria Bay system is bordered by the Mississippi River to the north, the active delta zone of the Mississippi to the east and southeast, and Bayou Lafourche to the west.

The Barataria Bay system is a triangular estuary, the base being formed by several barrier islands with tidal inlets between them. It contains 919,000 acres of marsh and open water areas and more than 50,000 acres of freshwater swamp (Day _et_ _al_., 1973). These marsh areas are cut extensively by both natural and man-made canals and bayous and contain many lakes and ponds.

Jefferson Parish is characterized by various permanent and temporary water bodies that provide a range of habitat for a rich diversity of aquatic biota. Species number and diversity are influenced and controlled by three major factors: water level fluctuations, salinity, and temperature.

The large marsh areas of Jefferson Parish are dissected by natural bayous and man-made drainage and oil well canals and are, consequently, influenced by tidal fluctuations. The planning area is characterized by a diurnal tidal cycle which varies in amplitude from 0.4 to 1.2 feet and a tidal range of from 0.9 to 2.5 feet. There is considerable annual variation in mean Gulf level, with the highest mean water level normally occurring during September and October, and the lowest from December through early March. Marshes, rarely covered with water during the winter, are regularly covered by late March. This seasonal pattern of low water levels greatly affects population and productivity levels (Day _et_ _al_., 1973).

Salinity is also a major factor in controlling the spatial distribution of aquatic biota. The low-lying topography of this region produces a wide range of salinity regimes from the Gulf to the inland fresh marshes. The increase in salinity towards the Gulf causes a gradual transition from fresh to marine habitats, leading to a wide diversity of intermediate types. This diverse assemblage of habitats in the planning area is described in the following paragraphs.

Major streams and bayous in the planning area are bayous des Familles, Barataria, Boeuf and Segnette, along with Millaudon, Estelle, Woods Place, Delery, Ross and Kenta canals. The natural streams often exhibit little or no movement except during periods of extensive rainfall and/or tidal influx. Many of the bayous have extensive mats of water hyacinths, which often restrict the productivity of other plant species in the immediate area. However, in many areas, hyacinths serve as valuable substrates for epibenthic organisms, which are extremely important to organisms at the higher end of the food chain.

Both the high seasonal rainfall and flat topography of the region combine to create numerous and extensive surface water storage areas such as lakes, ponds, bays, and wetlands. Within the Barataria Bay drainage system, the major lakes are Lac des Allemands, Lake Cataouatche, Lake Salvador, Little Lake, and Barataria Bay. These lakes are influenced by tidal influx of brackish water from the Gulf of Mexico, as well as variations in fresh water inputs.

In the parish, the marsh association is divided into fresh, intermediate, brackish and saline (Chabreck, 1972a), depending on both its proximity to the Gulf of Mexico and the salt intrusion due to tidal influx from the Gulf. The fresh marshes are characterized by salinities of 5.0 ppt or less. Dominant plant species in the fresh marshes are maidencane, bulltongue, spikerush, and alligator weed. Other common species include pennywort, pickerel weed, morning glory, St. John's wort, water hyacinth, rattlebox, whitetopped sedge and other sedges, rushes, elephant's ear, sawgrass, coontail, buttonbush, roseau, delta duck potato, arrowhead, duckweed, giant cutgrass, bladderwort and cattail (Chabreck, 1972a). The intermediate marsh is characterized by salinities of 5.0 to 10.0 ppt. Dominant species are widgeon grass and dwarf spikerush, with wiregrass, deerpea, Walter's millet, bulrush, bulltongue and sawgrass common also (Chabreck, 1972a). The brackish marsh is characterized by salinities of 10.0 to 20.0 ppt. Major plant species of this type are wiregrass, oystergrass and saltgrass, with three-cornered grass, coco and widgeon grass also common (Chabreck, 1972a). The saline marsh is characterized by salinities of greater than 20.0 ppt. Dominant plants found in the saline marshes of Jefferson Parish are saltgrass, oystergrass, wiregrass, black rush, with [illegible]twort, woody glasswort and black mangrove also common (Chabreck, 1972a).

Algae in the study area consist primarily of cyanophytes and chlorophytes. In addition, epiphytic diatoms are quite abundant in the marshes where they attach to the bases of the marsh grasses, contributing considerably to marsh productivity. The algae form the base of the food chain and are, therefore, of great importance to the productivity and survival of the aquatic community.

All of the streams or bayous throughout the planning area have floating mats of water hyacinths in varying degrees of abundance. Pennyworts, lilaeopsis and buttercups are commonly encountered intermingled in the water hyacinth mats. In addition to water hyacinths and duckweeds, water lettuce and frogbit are also commonly encountered floating on the surface waters of the extensive swampy areas.

Most of the bayous in the area, if they are not covered with floating mats of water hyacinths, have dense and extensive submerged grassbeds consisting of fanwort, watermilfoil, pondweed and, to a lesser extent, coontail.

Aquatic invertebrates are numerous in the streams, lakes, swamps and marshes of Jefferson Parish. Many invertebrates, especially the insects and crustaceans, are extremely important in the food web of sport and commercial fishes, various reptiles, amphibians and mammals. Invertebrates of commercial importance include the white shrimp (*Panaeus setiferus*), brown shrimp (*P. aztecus*), blue crab (*Callinectes sapidus*), crawfish (*Procambarus* sp.), and the American oyster (*Crassostrea virginica*). The average annual harvest of major commercial shellfish produced in Louisiana waters is included in Table 6-13.

There are several species of freshwater fishes in the streams which dissect the planning area. Gars (*Lepisosteus spp.*), bowfins (*Amia calva*), catfishes (*Ictalurus spp.*), crappie (*Pomoxis spp.*), and other sunfishes (*Lepomis spp.*) are all common in the area. Smaller fishes such as the mosquitofish (*Gambusia affinis*) and the sailfin molly (*Poecilia latipinna*) are particularly numerous. Sport fishes highly sought in the area include largemouth bass (*Micropterus salmoides*), black and white crappie, and sunfishes. Freshwater species sought commercially include the various catfishes. The majority of fish found in the bay are either truly estuarine species that spend their entire life in the estuary or marine species that use the estuary as a nursery area, spawning in the Gulf, moving to the bay as post-larvae, and returning to the Gulf as sub-adults. True estuarine species include the bay anchovy (*Anchoa mitchelli*), tidewater silverside (*Menidia beryllina*), Gulf killifish (*Fundulus grandis*), marsh killifish (*F. confluentus*), diamond killifish (*Adenia xenica*), and rainwater killifish (*Lucania parva*). Marine species which use the estuary only seasonally include the Atlantic croaker (*Micropogon undulatus*), spot (*Leiostomus xanthrus*), sand sea trout (*Cynoscion arenarius*), sea catfish (*Arius felis*), Gulf menhaden (*Brevoortia patronus*), striped mullet (*Mugil cephalus*), and the bay whiff (*Citharichthys spilopterus*).

Marine fishery enterprises are restricted to areas along the immediate coast and into the Gulf. Although many marine species are estuarine dependent

Table 6-13

TOTAL FISH AND SHELLFISH LANDINGS FOR 1980

(Includes inshore and offshore waters from
the Mississippi River to Bayou Lafourche)

SPECIES	POUNDS*	PERCENTAGE OF TOTAL	VALUE	PERCENTAGE OF TOTAL
Catfish & Bullheads	575,606	7.3	268,705	6.2
Croaker	172,603	2.1	38,393	0.8
Red Drum	438,034	5.6	247,306	5.7
Black Drum	402,060	5.1	74,066	1.7
Flounder (Atlantic & Gulf)	83,110	1.0	41,994	1.0
Sea Trout (Spotted & White)	445,063	5.7	290,587	6.7
Red Snapper	8,890	0.1	8,124	0.2
Pompano	18,926	2.4	29,848	0.7
Blue Crab	4,240,323	54.1	1,149,191	26.5
Oyster	1,285,765	16.6	2,193,671	50.5
TOTAL	7,670,380	100.0	4,341,885	100.0

*Live weight

Source: Allen, Orville. pers. comm.

and, consequently, occur in low salinity waters, seldom are these species harvested in the estuarine areas. The average annual harvest of major commercial fish produced in Barataria Bay is included in Table 6-13.

Future Conditions Without the Project

Existing treatment facilities within the planning area discharge effluent to the canals and bayous that criss-cross the West Bank, or discharge to groundwaters in the case of individual septic disposal systems. These discharges combine to increase nutrient loading of Barataria Bay and the marshes existing along the canals that drain to the bay. As development on the West Bank continues, wastewater discharges to these canals and bayous will continue to increase, imposing an increasing stress on the assimilative capacity of aquatic communities in the basin. This may lead to the development of nuisance "weed" species capable of tolerating higher wastewater flows and nutrient loadings, thereby displacing the existing, highly productive food chains and commercial fisheries within the Barataria Basin and along the Gulf.

Analysis of Alternatives

With respect to aquatic communities, the final alternatives can be grouped by the areas that will be receiving discharges. There are two major discharge alternatives: discharge to Barataria Bay, and discharge to the Mississippi River. The most significant impacts to aquatic communities will occur under the existing conditions, due to the continuation of water quality degradation and nutrient loading of the bay. Advanced wastewater treatment (AWT) would alleviate much of the water quality and nutrient problems, but was eliminated earlier based on cost-effectiveness. The final alternatives, with discharges to the Mississippi River, will have a similar non-significant impact.

Terrestrial Communities and Wetlands.

Existing Conditions

Jefferson Parish is characterized by four major kinds of vegetation associations: disturbed area vegetation, marshes, swamp, and drier wooded areas (VTN Louisiana, Inc., 1975).

Modified wetlands or fastlands are areas of marsh or swamp that have been leveed, ditched, filled or drained. Surface features and hydrology have been altered or restricted to the degree that natural wetland processes may no longer occur. These areas may be completely drained, only slightly modified, or flooded and impounded. These marsh or swamp areas were modified for the purposes of urbanization, flood protection, navigation, farming, spoil disposal, or waterfowl management (Burk & Associates, Inc., 1978).

Fresh marshes have a high value to waterfowl because of their dense plant growth and scattered ponds, which provide food and habitat. These areas are also important for their capacity as productive wildlife habitats for commercially valuable furbearers found in marshes. The productivity of marine fisheries is also linked to marsh areas by their use as nursery and feeding grounds for blue crab, shrimp, and several fish species. They are also breeding areas for fresh and saltwater mosquitos which plague nearby cities, but the larval and adult forms of these mosquitos serve as a vital link in the marsh food web.

The vegetation of swamp areas provides a habitat and food source for deer, furbearers, birds, amphibians and reptiles. Trees in these areas are valuable for their use as lumber, prevention of soil erosion, and their moderating effect on regional temperatures.

The bottomland woods provide area for recreational and commercial uses, but are especially significant for their function as highly productive wildlife habitat. These areas provide food for many animals, as well as commercially important lumber products.

In a study for the Bayou des Familles Flood Protection Levee in south-central Jefferson Parish (VTN Louisiana, Inc., 1975), the fauna of the area was described as one of the richest (both in number of species and numbers of individuals) of any area of similar size in Louisiana. The vast areas of marshes, swamps, woodland, and other vegetation types provide large areas of diverse habitat. The interspersion of the vegetation types provides a wide variety of habitat and microhabitats which supports a varied wildlife population.

Future Conditions Without the Project

As development on the West Bank continues, there will be an increase in the number of individual treatment facilities and wastewater flows to Barataria Bay. This may cause significant disruptions of terrestrial and aquatic community structures and functions, since they are closely interrelated within the planning area.

Analyses of Alternatives

For this analysis, data were obtained from field observations, aerial photographs, maps, and other literature sources. Each alternative was evaluated in terms of impacts on terrestrial ecosystems and based on the type and value of habitat traversed.

Overall environmental impacts from any of the conveyance system alternatives are expected to be minor. The amount of disturbed woodland area ranges from 17 to 27 acres, while right-of-way and field habitat disturbance varies from 1.6 to 4.5 acres (Table 6-14). The differences among alternatives were not significant enough to eliminate any alternative from further analysis.

Long-term impacts will result from the removal of woodland habitat and the construction of permanent aboveground facilities. The magnitude of these impacts is related to the amount of habitat removed and its relative quality. Required acreages for the permanent aboveground facilities (i.e. sewage treatment plants) range from a minimum of 35 acres to a maximum of 75 acres, except for the aquatic treatment alternative proposed at the Churchill Farms site, which would require a minimum of 740 acres and a maximum of 856 acres.

The Timberlane site is to the east of and adjacent to a pipe storage area off Peters Road. Immediately adjacent to the pipe yard is a disturbed area, which was previously used as a landfill for industrial-type wastes. Vegetation in this area is generally herbaceous. Shrubs and trees such as willows, tallow tree and elderberry are also common. To the east of and adjacent to this disturbed site is a mature woodland area in which deciduous species such as red maples, willows and sweetgum are common, and in which such species as cypress and tupelogum occur. This site has been designated as a non-wetland by the U.S. Army Corps of Engineers (Ventola, 1981).

The U.S. 90 site is located in Bridge City, to the east of the existing Bridge City sewage treatment facility. The western portion of this site is pasture and field in which grasses and herbaceous species are common. The majority of the site, however, is mature woodland characterized by deciduous trees. Red maples, willow, ash, tallow tree, southern red oak, and sweetgum are common tree species. The U.S. Army Corps of Engineers (Skougard, 1981) has determined this site to be a non-wetland area.

Table 6- 14

SHORT-TERM DISRUPTION OF TERRESTRIAL ECOSYSTEMS DUE TO CONVEYANCE SYSTEM CONSTRUCTION

(Acres)

ALTERNATIVE	WOODLAND	FIELD	RIGHT OF WAY	ROAD SHOULDER	DISTURBED AREAS*	TOTAL
A	20.6	2.4	4.5	45.4	3.9	76.8
B	27.2	1.7	3.0	44.3	4.2	80.4
C	18.4	2.2	3.0	42.8	13.0	79.4
D	20.8	3.2	4.5	43.9	3.9	76.3
E	26.6	2.0	2.4	46.9	3.7	81.6
F	20.0	2.6	3.8	48.0	3.5	77.9
G	17.8	2.4	2.4	45.4	12.5	80.5
H	16.8	2.4	3.7	49.3	6.5	78.7
I	17.8	1.6	3.7	50.8	11.6	85.5
J	25.5	2.6	3.8	41.3	4.0	77.2
K	19.7	2.4	3.8	46.5	8.5	80.9
L	0.0	0.0	0.0	0.0	0.0	0.0

Source: VTN Analysis, 1981.

*Areas in which original vegetation has been removed and presently are in various stages of vegetative succession.

The entire Cousins North site is wooded, with the exception of a transmission right-of-way which is basically field and successional field habitat. The mature woodland generally supports deciduous trees such as red maples, willow, ash, hackberry, honey locust and mulberry; however, cypress is also present in the overstory. The site has been designated as a non-wetland by the U.S. Army Corps of Engineers (Skougard, 1981).

The Kelvin Tract has been evaluated by the U.S. EPA with respect to the wetland characteristics of the site. The southwestern quarter of the site, which consists of an old solid waste landfill and supports generally herbaceous disturbed site species, was determined to be non-wetland. This area is considered feasible for use as a sewage treatment plant site. The remainder of the site is classified as wetland or transition-type wetland and is considered impractical for use as a treatment facility. The U.S. Army Corps of Engineers (Ventola, 1981) has designated all except the southwestern quarter of this site as a wetland.

Vegetation at the Hero Cut-off site consists of shrub and persistant emergent vegetation with relatively small isolated patches of deciduous trees. Typical plants include maidencane, phragmites, groundselbush, tallow tree and willows. The site has been classified as a wetland by the U.S. Army Corps of Engineers (Ventola, 1981) and is thus eliminated from further consideration as a potential sewage treatment plant site.

The Churchill Farms aquatic treatment site is being considered for use as a marsh treatment site, as opposed to the conventional form of sewage treatment proposed for other sites. On this site, it is proposed that wetland vegetation and other processes, in addition to polishing ponds, will be used to treat wastewaters. The site can be generally characterized as pasture with patches of mature, mixed deciduous woodland. The U.S. Army Corps of Engineers (Ventola, 1981) has indicated that this site may have areas classified as wetlands. Field investigation of the site suggests that marsh treatment on this site appears impractical. The marsh section of this treatment system is located predominantly in an area of pasture with lesser amounts of woodland. It does not presently support plants characteristic of marsh, and apparently is in the process of being drained. For these reasons, this site as proposed is judged infeasible for use as a marsh treatment site.

Rare, Threatened or Endangered Species.

Existing Conditions

There are no plants listed as threatened or endangered in the planning area according to the U.S. Fish and Wildlife Service (1979). Some plants, however, known to have been collected only once or twice within the state, are listed as unique until other populations are found within the state (Brumfield, 1974). The Louisiana irises, of which there are several species, are listed among the unique Louisiana wildflowers. Irises included in this listing are the red iris (Iris fulva), yellow flag (I. pseudacorus), and blue flag iris (I. versicolor). In addition, plants of unique significance in Jefferson Parish include those considered to be the largest of their species in the state (Louisiana Forestry Association, 1972). The plants include a hackberry (Celtis laevigata) with a circumference of 22 feet, 2 inches. This tree is located in northwest Jefferson Parish. With regard to unique plant communities, the Engineer Agency for Resources Inventories (1973) lists the virgin swamp communities of Avondale as unique areas.

Endangered species which may possibly occur within the planning area include: the bald eagle, the brown pelican and arctic peregrine falcon (U.S. Fish and Wildlife Service, 1980a). Significant habitat of the bald eagle (Haliaeetus leucocephalus) is found between Lafitte and Little Lake and along the west shoreline of Lake Cataouatche (see appended USFWS letter of 9-2-80).

During the early 1900's, 50,000 brown pelicans (Pelecanus occidentalis) nested along the Louisiana coast. The last nesting colony was recorded in 1961. By 1968, the pelican was restocked in Louisiana, but by 1975 it had again shown a decline in numbers (Engineer Agency for Resource Inventories, 1973). Active nesting colonies occur in the southern end of Barataria Bay on Queen Bess Island. Pelicans can also be anticipated feeding and loafing along the coast within the project area (U.S. Fish and Wildlife Service, 1980a).

The endangered arctic peregrine falcon (Falco peregrinus tundruis) is a transient species which may occur occasionally along the barrier islands on the coast (U.S. Fish and Wildlife Service, 1980b)(see appended 9-5-80 USFWS letter).

Future Conditions Without the Project

No impacts to endangered species or change in populations of these species are anticipated to occur in the absence of the project.

Analysis of Alternatives

An on-site inspection of the potential project construction areas, coordination with the Louisiana Department of Wildlife and Fisheries (Watson, pers. comm.), a review of available literature, and an analysis of the effects of the project on the species were performed. The closest eagle nesting area is over 11 miles from any potential areas of facilities construction or effluent discharge proposed under any alternative. The hunting range of the bald eagle could include the east shore of Lake Cataouatche, which is approximately three miles from any potential area of facilities construction or effluent discharge. The habitat of the brown pelican and arctic peregrine falcon are similarly remote from the potential project area. Therefore, no adverse impacts on endangered species are anticipated as a result of any of the final alternatives.

Jean Lafitte National Historic Park.

Existing Conditions

The Jean Lafitte National Historic Park is partially located within the planning area. The park was established by Title IX of Public Law 95-625. It consists of an 8,000-acre core area and a 12,000-acre park protection zone located immediately north of the core area.

Future Conditions Without the Project

The existing wastewater treatment plants in the planning area discharge effluent to the Barataria Basin, which includes Lafitte Park. As stated earlier, the existing plants, at their present size, will be grossly overloaded in the future if the current population growth trend continues. Pollution loadings to the Barataria estuary will, therefore, increase and present the possibility of degradation of the park area.

Analysis of Alternatives

The final alternatives which would discharge effluent to the Mississippi River could be expected to have a beneficial effect on the park, as the presently inadequate plants would no longer discharge to the Barataria Basin.

The two alternatives with discharge to the Barataria Basin would involve advanced waste treatment and would be an improvement of the present conditions. The possibility of plant malfunction and adverse impacts from untreated discharges to the park does, however, exist. There will be no adverse impacts on the park due to facilities or conveyance system construction.

6.2.6 Cultural Resources

Existing Conditions. In order to comply with existing state and federal laws, the following services were performed for the Jefferson Parish West Bank EIS:

- † literature survey of existing archaeological/cultural/historical resources of the planning area,
- † coordination with the Louisiana State Historic Preservation Officer,
- † site-specific literature survey of proposed treatment plant sites,
- † site walkover of proposed sites, and
- † description of impacts on each site and recommended mitigation measures.

The broad area covered by this investigation encompasses a variety of distinct environmental zones between the Mississippi River to the north and the Gulf of Mexico to the south. Two sites of National Register significance or eligibility are located in Jefferson Parish. The first of these is Fort Livingston, located on Grand Terre Island at the southern boundary of the parish; the second is Camp Parapet Powder Magazine in Metairie. Both sites are located outside of the planning area.

In summarizing the literature on archaeological areas, 97 sites were recorded for the area of project impact. The nearest concentration of sites is along the western and northwestern shore of Lake Salvadore. No other recorded sites are known to be located specifically within the proposed project area.

Future Conditions Without the Project. From the viewpoint of cultural resources, there will be no impact associated with the No Action alternative.

Analysis of Alternatives. The six final treatment plant sites were surveyed during the week of June 15-19, 1981. Due to the location of all six sites in the northern third of the planning area, emphasis was placed on consideration of the sites' historic or architectural merit.

The review and assessment of archaeological and cultural resources (Beavers *et al*., 1980) indicates that there are no prehistoric or historic archaeological sites recorded for any of the six sites. In addition, there are no sites listed on or eligible for listing on the National Register of Historic Places (NRHP) for any project site. Site walkovers and boundary traverses failed to reveal any cultural resources, and standing structures of architectural or historic merit were not found. Historic maps also indicate that all six sites were swamp or marsh prior to urbanization of the West Bank and, as such, would be low probability areas for historic site locations. Based on these studies and surveys of the six proposed treatment facilities sites, there will be no effect on cultural resources resulting from the proposed construction project. Survey reports have been sent to the State Historic Preservation Officer (SHPO) for review and comment.

With regard to the conveyance system, archaeological surveys have not yet been undertaken. Prior to any construction grant(s) being awarded by EPA, archaeological surveys will have to be performed and the results provided to the SHPO for a determination of significance. If significant resources are found, the Advisory Council on Historic Preservation will be informed and allowed to comment in accordance with their procedures (36 CFR 800). Additionally, if cultural resources are discovered during the construction of wastewater treatment plant(s) or the conveyance system, work will be halted and the SHPO contacted for a determination of significance.

6.2.7 Socioeconomics

Population.

Existing Conditions

Historically, the population of Jefferson Parish has shown a steady increase over the last 150 years, from about 7,000 persons in 1830 to an estimated 482,450 in June 1980 (Jefferson Parish, 1980). Most of this growth has occurred during the past 40 years, with the parish population increasing eight times from a 1940 level of 50,427 (Jefferson Parish Planning Department, 1979), the fastest growth rate in the state. According to the U.S. Department of Housing and Urban Development (1976), this growth can be attributed primarily to vast new residential developments in the Metairie and Kenner areas, and to the construction of the Greater New Orleans Mississippi River Bridge in the late 1950s, which provided immediate access to the West Bank area. As a result, Jefferson Parish gained an increasingly urban character as both the East Bank and West Bank areas became modern suburban communities. Population profiles indicate that the average Jefferson Parish resident is younger and has both more education and a greater income than his counterpart in the overall New Orleans metropolitan area.

To date, most of the growth in Jefferson Parish has occurred on the East Bank area. The West Bank population has consistently been about 60 per cent of that of the East Bank, except during the period immediately following World War II when it increased 165 per cent to equal approximately 92 per cent of the East Bank population. On the East Bank, the surge in population occurred during the following decade, increasing 150 per cent from 1950 to 1960 (Table 6-15). It is anticipated that future growth in the parish will occur primarily on the West Bank, because of the limited availability of developable land on the East Bank. In addition, further industrialization of the Harvey Canal-Peters Road area on the West Bank and the construction of additional river crossings would provide the basis for future population growth.

Current population statistics reveal that parish population is significantly more urban than that of the state as a whole, with the per cent of total population residing in urban areas showing a continual increase. In 1950, about 89 per cent of the parish population and 55 per cent of the entire state resided in urban areas. This increased to 96 per cent and 66 per cent, respectively; and the per cent of rural farm relative to nonfarm residents also declined, from eight per cent farm/92 per cent nonfarm in 1950, to one per cent farm/99 per cent nonfarm in 1970 (Jefferson Parish Planning Department, 1980). Although the population of both the state and parish are increasing, the parish population is increasing faster that that of the state. Parish population was four per cent of the state in 1950, increasing to 11 per cent in 1980 (Jefferson Parish Planning Department, 1980). Also, the population composition is changing slightly, with the parish and state non-white populations showing a slow but steady percentage decrease from 1950 to 1980 (Table 6-16).

Preliminary 1980 Census data indicate a Jefferson Parish population of 454,592, of which approximately 60 per cent is on the East Bank, with the remaining 40 per cent on the West Bank (Jefferson Parish Planning Department, 1980). Population densities vary, with those for the West Bank being considerably less than for either the East Bank or the entire parish, due to the extent of relatively unpopulated wetlands which comprise the southern half of the parish.

Various population projections are available for the state, Jefferson Parish, and the planning area. These projections indicate that between 1980 and 2010 Jefferson Parish will increase by 40 per cent, and the planning area by 92 per cent from 1980 to 2005 (URS Company, 1981). Detailed projections are presented in Table 6-15.

Table 6-15

SELECTED AND PROJECTED POPULATION STATISTICS
(Louisiana and Jefferson Parish)

LOUISIANA		JEFFERSON PARISH			WEST BANK			EAST BANK	
Year	Population	Population[a]	Per Cent of State	Per Cent Change	Population	Per Cent of Parish	Per Cent Change	Population	Per Cent of Parish
1830		6,846							
1880		12,166		78%					
1900		15,321		26					
1930		40,032		161					
1940		50,427		26	18,832	37%	---	31,595	63%
1950	2,683,516	103,873	4%	106	49,876	48	165%	53,997	52
1960	3,257,022	208,769	6	101	73,737	35	48	135,032	65
1970	3,643,180	337,569	9	62	125,170	37	70	212,398	63
1980	4,017,515[d]	454,592[b]	11	28	179,970[b]	40	33	274,622[b]	60
					169,165[c]				
1990		631,660		31					
2000		684,990		8					
2005	N/A	668,500			325,500[c]			N/A	
2010		716,660		4					
2020		749,790		5					

Notes:
- a) Parish total adjusted to the sum of East Bank and West Bank,
- b) From preliminary 1980 census data. Projections for 1990-2020 are based on data which projected 1980 Parish population at 482,450, a 43% increase from 1970.
- c) URS planning area. Based on same data which predicted 1980 parish population at 482,450.
- d) Preliminary 1979 estimate from U.S. Census, Louisiana Tech University.
- N/A Not available.

Sources: Jefferson Parish Planning Department, 1979, 1980; URS, 1981; Louisiana Tech University, 1980.

Table 6-16

SUMMARY OF POPULATION CHARACTERISTICS

Jefferson Parish and State of Louisiana

					DISTRIBUTION									
	RACE				RURAL									
Year	White	Per Cent	Non-White	Per Cent	Farm	Per Cent	Non-Farm	Per Cent	Total Rural	Per Cent Rural	Urban Population	Per Cent Urban	Total Population	Per Cent of State
1950														
Parish	87,604	84.3%	16,269	15.7%	951	8%	10,707	92%	11,658	11.2%	92,215	88.8%	103,875	4%
State	1,796,683	67.0	886,833	33.0	567,455	47	644,365	53	1,211,820	45.2	1,471,696	54,8	2,683,516	
1960														
Parish	176,845	84.7	31,924	15.3	268	2	12,043	98	12,311	5.9	196,458	94.1	208,769	6
State	2,211,715	67.9	1,045,307	32.1	233,138	19	963,278	81	1,196,416	36.7	2,060,606	63.3	3,257,022	
1970														
Parish	294,480	87.1^a	43,088	12.7^a	52	<1	14,670	<99	14,722^b	4.2	323,507	95.8	338,229	9
State^{1,2}	2,541,498	69.8	1,099,808	30.2	114,175	9	1,122,855	91	1,237,030^b	33.9	2,406,150	66.1	3,643,180	
1980														
Parish	380,645	83.7	73,947	16.3										
State	N/A		N/A		Data Not Available for These Categories								4,017,515	

Notes:
1) Corrected total of +1,874 persons not broken down by urban-rural.
2) Corrected total of +1,874 persons not broken down by race.
a) Corrected total of +661 persons not broken down by categories.
b) Adjusted so rural farm + rural non-farm totals rural, and rural + urban = total population
N/A - Not Available

Source: Jefferson Parish Planning Department, 1979.
VTN estimates, 1980.

Future Conditions Without the Project

Population growth on the West Bank will continue as part of the overall growth of the urbanized greater New Orleans area. The trends for population growth have been projected by the parish and Louisiana Tech University. Total population in Jefferson Parish is projected to increase from 431,820 in 1980 to 684,990 in the year 2000, an increase of approximately 58.6 per cent. Although not in the same time period, the West Bank planning area is projected to increase from 169,165 in 1980 to approximately 325,600 in the year 2005, an increase of about 92.5 per cent. Thus, it can be seen that the planning area for the West Bank is projected to increase at a faster rate than the overall growth of the parish. This can be expected since the majority of the East Bank of the parish is currently urbanized, while portions of the West Bank have land available for potential expansion and population growth.

Implementation of the No Action alternative would not affect the overall trend of population growth on the West Bank, since there is limited land available for development in the greater New Orleans area. However, implementation of the No Action alternative could slow the rate of growth in population of the West Bank. Individual developers would be forced to provide separate sewer facilities, thereby entailing additional construction costs and potential delays in implementing development. Potentially, if sewage treatment facilities are not capable of accommodating the population growth, the parish may be forced to implement policies to limit or curtail additional development on the West Bank.

Limiting growth of an urban area such as the West Bank could result in a general decline in residential and commercial areas which would be an adverse environmental effect. Housing units and commercial establishments would become less desirable without those facilities necessary to accommodate a growing population. Eventually, residents would seek other areas in which to live, possibly contributing to a trend of decline.

Analysis of Alternatives

Implementation of any of the alternatives would result in similar effects on population on the West Bank. They would permit population growth on the West Bank in the areas where land is available for development. The growth, however, would not be a direct result of implementation of any of the alternatives.

Overall population growth on the West Bank will be a function of economic and social urbanization patterns and planning policies implemented by Jefferson Parish and federal authorities.

Recreation.

Existing Conditions

Recreation opportunities for the West Bank consist of water-oriented activities such as fishing and boating in the sparsely-populated southern extreme of the parish, and of neighborhood and district parks located throughout the northern urbanized and developing areas of the West Bank. There are 15 neighborhood parks, ranging in size from two to ten acres and containing active sports facilities and playgrounds. The four district parks are from 11 to 25 acres and provide community centers, swimming and tennis facilities (LaDOTD, 1977).

The recreational area of significance on the West Bank is the Jean Lafitte National Historical Park. Located primarily west of the Louisiana Highway 45 and east of Lake Salvador, this park occupies approximately 8,000 acres of land. A 12,000-acre "park protection zone," immediately north of the park, provides a buffer area between the main portion of the park and the urbanized areas of the West Bank. The park is primarily a wetland, as designated by the Corps of Engineers. Development plans for facilities in the park have been adopted by governing federal and state agencies.

Future Conditions Without the Project

Implementation of the No Action alternative would not create direct effects upon the recreation facilities of the planning area. The No Action alternative would, however, affect urban quality since sewage would continue to be discharged into the canal system. Notwithstanding the level of treatment, drainage to the canal system would continually create adverse conditions in the urban environment on the West Bank.

Analysis of Alternatives

Implementation of the alternatives would not directly affect recreation opportunities on the West Bank. However, due to population growth projected for the planning area, park and recreation facilities on the West Bank will be indirectly affected by more intensive use. There is potential for direct effects upon the Jean Lafitte National Historic Park. The alternatives involving advanced treatment at the Hero Cut-off site (Alternatives B and E) could potentially create adverse effects upon the Park due to discharges. Since the discharge will have to meet the requirements set by the EPA and the state, these effects would not be significant. Alternatives involving discharge to the Mississippi River should not affect Jean Lafitte Park.

Employment and Income Characteristics.

Existing Conditions

The economic activity of Jefferson Parish is an integral part of the total economic unit comprised by the greater New Orleans area, and economic fluctuations within one parish ultimately affect the others. The greatest economic contributors are generally considered to be the Port of New Orleans and tourism. However, data indicate that, while tourism-related activities are the greatest contributor, government is the second and port-related activities are fifth. Table 6-17 indicates that five areas of economic activity accounted for almost 80 per cent of total employment for 1975. When the number of jobs are considered, the employment sectors supplying the greatest number of jobs in 1975 were: trade, services and miscellaneous; government; and transportation, communication and public utilities.

These economic trends are reflected in employment growth characteristics fo the parish, which show a work force increase of 76 per cent from 1960 to 1970. A comparison of 1975 average weekly wages for Jefferson Parish and other parishes within the New Orleans Standard Metropolitan Statistical Area (SMSA) reveals that the parish is lower than the SMSA in seven of the nine categories. Only manufacturing was significantly higher (five per cent), with a parish average of $233.40 compared to the SMSA average of $221.40. Contract construction was nominally higher (0.2 per cent), at $222.86 for the parish and $222.36 for the SMSA. By comparison, average weekly wages for the parish in 1965 were lower than the SMSA in six of the eight categories. Wages for the government category were not available for 1965. For Jefferson Parish, the greatest increase from 1965 to 1975 occurred in the category of Transportation, Communication and Public Utilities, with average weekly wages rising 106 per cent, and the least increase was in Finance, Insurance and Real Estate, which showed a 57 per cent gain over the ten-year period. As a comparison, the greatest increase for the SMSA was 142 per cent in Trade, and the smallest was 71 per cent in Finance, Insurance, and Real Estate. (Note: These are the latest comparable data).

Table 6-17

SELECTED WAGE AND SALARY STATISTICS

New Orleans SMSA 1975

TYPE OF INDUSTRY		PER CENT
1. Tourism-related		
Services and Miscellaneous	20.0%	
Retail Trade	17.2%	
Printing, Publishing and Allied Industries	0.7%	
Subtotal		37.9%
2. Government		16.1
3. Transportation, Communication, and Public Utilities		10.4
4. Wholesale Trade		8.2
5. Port-related		
Water Transportation	3.8%	
Ship and Boatbuilding and Repairing	3.2%	
Subtotal		7.0
Contributions to Total Wages and Salaries		79.6%

Source: Regional Planning Commission, 1978.

Statistics on per capita personal income for the New Orleans SMSA show Jefferson Parish to be the highest of all the parishes within the SMSA. The greatest percentage increases from 1965 to 1975, however, were 123 per cent for St. Bernard and St. Tammany parishes. Table 6-18 shows per capita personal income for the four parishes comprising the New Orleans SMSA.

Future Conditions Without the Project

Implementation of the No Action alternative would continue the existing trends of employment and income on the West Bank of Jefferson Parish. While the No Action alternative would not directly affect the income or employment characteristics, indirect effects could occur if its implementation were to slow growth of the population on the West Bank. Potentially, this slowing of growth could decrease the growth rate of income and employment on the West Bank.

Analysis of Alternatives

Implementation of any of the other alternatives could involve economic effects on certain portions of the West Bank economy. Potentially, implementation of the alternatives involving discharge to the Barataria Basin (Alternatives B and E) could create adverse effects upon the fishing industry in the southern portion of the parish. However, since the discharge will meet EPA and state requirements, these effects are not expected to be significant. The long-range effects of any of the alternatives would be to continue the major economic contribution of the fishing industry to the economy of the West Bank. Historically, the commercial fishing industry in the entire state has accounted for up to one-quarter of the total U.S. output. Thus, protection of this portion of the economic base of the region is a major consideration. This concern was stated in the Citizens Advisory Committee and public meetings.

The other effect of implementation of any of the alternatives, including the No Action alternative, involves taxation considerations. In January 1981, the voters of Jefferson Parish voted to increase the sales tax from five-and-one-half per cent to six per cent. The increased revenues will primarily finance sewer and drainage construction, operation and maintenance throughout the parish. The parish has estimated that the first year revenue from this tax will be approximately $16 million, with approximately $13.8 million available to the unincorporated areas of the parish and the remainder to incorporated cities. Of the total

Table 6-18
PER CAPITA PERSONAL INCOME BY PARISH
New Orleans SMSA
1965 and 1975

AREA	1965[a]	1975[b]	PER CENT INCREASE
Jefferson Parish	\$2,749	\$5,970	117%
Orleans Parish	\$2,651	\$5,631	112%
St. Bernard Parish	\$2,452	\$5,474	123%
St. Tammany Parish	\$2,251	\$5,028	123%
New Orleans SMSA	\$2,649	\$5,703	115%

Notes:

a) Derived from Bureau of Economic Analysis, U.S. Department of Commerce, Social and Economic Statistics Administration

b) Derived from Bureau of Economic Analysis, U.S. Department of Commerce, Survey of Current Business, Vol. 57, April 1977

Source: Regional Planning Commission, 1978.

available to the unincorporated areas, approximately 54 per cent will be available for use on maintenance and operation of the sewage and drainage system. The exact allocation of the funds for West Bank sewage treatment facilities has not been determined.

Construction and operation of the sewage system proposed under any of the alternatives would create economic effects from the resulting employment, wage and salary income, and local purchases of materials, equipment and supplies. Generally, although these factors would have a beneficial effect upon the local economy, they would not be significant when compared to the overall economic base of the West Bank. Due to consolidation of facilities, there may be a reduction in the number of personnel required to operate and maintain the sewer system. This change is not expected to have a substantial effect upon employment on the West Bank.

The indirect effects of implementation of these alternatives will involve the general overall growth of population and the economic base of the West Bank. As development occurs on the West Bank, residential, commercial, and industrial properties will continue to increase in value. This trend will be part of the overall development of the West Bank and will be an indirect result of implementation of the alternatives. It is not possible to clearly establish the changes in land values which might occur on the West Bank.

Education.

Existing Conditions

Educational opportunities are provided primarily by the Jefferson Parish Public School System, which maintains 61 schools on the West Bank. During the 1979-1980 school year, approximately 30,500 children were enrolled in West Bank schools. In addition to the public schools, there are 30 non-public schools on the West Bank, serving grades K through 12.

Enrollment in the parish public schools has dropped at a rate of about 800 to 1,200 students per year from 1976 to 1980. For the 1980-1981 school year, however, there was an increase at the elementary school level (Horne, pers. comm.). Current plans for the district involve renovation of existing schools and the construction of 13 new schools.

Future Conditions Without the Project

Implementation of the No Action alternative will not cause any direct affect on education opportunities on the West Bank. The implementation of the No Action alternative would, however, continue the problems of sewer backup during rainstorms. To the extent that these problems affect schools on the West Bank, implementation of the No Action alternative can be expected to continue the trend of occurrences during periods of high rain.

Indirect effects on the school system could be a factor with the No Action alternative. A slower growth in population from implementation of the No Action alternative could result in slower growth in school enrollment.

Analysis of Alternatives

Implementation of any of the alternatives is not expected to have a direct effect upon educational trends on the West Bank. However, implementation of the alternatives would provide the basis for population growth on the West Bank, thereby indirectly affecting the educational facility requirements.

Public Services and Utilities.

Existing Conditions

Telephone service to the West Bank is provided by South Central Bell Telephone Company. The system includes approximately 62,000 residential and 15,000 business customers located throughout the West Bank area (Laughlin, pers. comm.).

Electricity is provided to the West Bank by the Louisiana Power and Light Company, a member of the Middle South Utilities System, Inc. Louisiana Power and Light generates its own power at four generating stations located throughout the state, including Nine-mile Point located near Bridge City on the West Bank. It also buys energy from other companies within the Middle South system. A 1,165 MW nuclear power plant is under construction at Taft and scheduled for completion in March 1983 (Fort, pers. comm.). Supply problems are not anticipated in the future.

Natural gas is provided by the Louisiana Gas Service Company, which serves both residential and commercial customers on the West Bank.

The Jefferson Parish Water Works maintains and operates the water system for the unincorporated areas of the West Bank. The system has a 44 mgd capacity provided by two water purification plants, one 10-mgd and one 34 mgd facility. The two plants are located in Marrero (Blanchard, pers. comm.) and utilize the Mississippi River as their source of water.

The plants are currently operating at 48 per cent of their capacity with an average consumption of 21 mgd needed to supply 35,248 residential and 2,596 commercial users (Eberhardt, pers. comm.).

There are currently no plans to increase the capacity of the water plants, although there is the possibility of building a new facility, as the 10-mgd plant is in deteriorating condition (Blanchard, pers. comm.).

For a description of the sewerage system in Jefferson, see Chapter 4.

The Jefferson Parish Drainage Department builds, maintains, and operates pumping stations and drainage canals for the West Bank. The department maintains storm drain lines and a subsurface system to prevent flooding of streets. There are currently 24 pumping stations on the West Bank which pump water from the drainage system into various lakes and bayous within the parish (Eberhardt, pers. comm.).

Solid waste pickup and disposal in Jefferson Parish is contracted through the Jefferson Disposal Company, Inc., which operates the Greater New Orleans Sanitary Landfill on the West Bank. Jefferson Disposal collects trash and solid waste from all of the planning area. The landfill is also open to the public for the disposal of trash and solid waste. No hazardous or toxic wastes are accepted for disposal at the site. It is anticipated that the landfill can be utilized for another 20 to 30 years by covering the waste with dirt to higher contours than the surrounding land (Silverman, pers. comm.).

In addition to these operative sites, the parish has applied to the state for a permit to operate its own sanitary landfill (Kelvin Tract) located in the northwest portion of the West Bank. About 125 acres are allocated for solid waste disposal, which includes nine to ten tons daily of dried sludge from wastewater treatment operations. It is anticipated that this acreage would accommodate parish needs for a period of ten years (Koloski, pers. comm.).

Future Conditions Without the Project

Telephone, electricity, natural gas, water, drainage, and solid waste facilities would not be affected by implementation of the No Action alternative. The existing trends and usage for public services and utilities can be expected to continue with implementation of the No Action alternative.

Analysis of Alternatives

The direct effects of implementation of any of the alternatives would be similar. The trends and usage for public services and utilities can be expected to continue under any of the alternatives. Implementation of the alternatives would not directly increase the rate of consumption or need for facilities in any of the public services or utilities. The need for public services or utilities will be affected by the overall trends of the greater New Orleans area rather than development of a sewage system. There will, however, be an exception due to increased requirements for electrical energy to service the pump stations. The electrical requirements for pumping have been delineated in Section 6.2.8 of this chapter.

Telephone, natural gas, and water usage will not be directly affected by implementation of any of the alternatives. The drainage system and solid waste requirements of the residents and businesses on the West Bank would not be affected by any of the alternatives. Solid waste (sludge) disposal for the sewerage system is discussed in Section 5.1.2 of Chapter 5.

The indirect effects of implementation of the alternatives will be related to population growth in the West Bank planning area. The alternatives will result in a higher rate of growth which would increase the rate at which utilities would be utilized. The extent of this more rapid rate of growth, however, cannot be determined.

Public Health and Safety.

Existing Conditions

Police protection for the unincorporated West Bank is provided by the Jefferson Parish Sheriff's Office and the Louisiana State Police. Both provide assistance to other law enforcement agencies as requested.

Fire protection for the West Bank is provided by 17 volunteer fire departments, with about 1,400 personnel operating 25 fire stations.

Health care for West Bank residents is provided by numerous health care professionals in private practice, plus two hospitals, three nursing homes, a mental health clinic, family planning clinic, and a general medical clinic (Regional Planning Commission, 1978).

West Jefferson General Hospital is a 430-bed facility which offers a full range of acute-care services, including psychiatric, coronary care, and burn units. In addition, it has emergency helicopter service with equipment staffed by specially trained personnel for transport of medical emergencies, including industrial accident victims. Currently, the hospital is expanding to enlarge and remodel its support services, such as laboratories and nuclear medicine. In addition, South Jefferson General is a 75-bed medical facility with capabilities for general services and care.

Future Conditions Without the Project

Implementation of the No Action alternative will not directly affect safety needs on the West Bank. The indirect effects of the No Action alternative would be potentially to slow the requirements for additional police and fire protection due to slower population growth.

Public health concerns will be directly affected by the No Action alternative. During the scoping meeting, residents of the West Bank complained that the sewer system would often back-up into their homes and yards in periods of high rainfall. Some of these problems are caused by high rates of infiltration and by illegal connections of individual storm drains to the sewer system. Although this latter problem is not caused by the condition of the sewer system, implementation of the No Action alternative would result in continuation of the problems associated with infiltration into the sewer system, and back-up of sewage into residences during periods of high rainfall.

Analysis of Alternatives

Implementation of any of the alternatives would not have direct effect on the requirements for police and fire protection and health services on the West Bank. The indirect effects on these services would occur through a faster rate of population growth which might occur following implementation of the alternatives. The extent of this faster rate of growth and increased requirements cannot be determined.

Implementation of any of the alternatives should prevent back-up of sewage into houses during periods of heavy rainstorms. This should alleviate any potential public health dangers under existing conditions. Since all discharges will meet the requirements of EPA and the state, public health would not be adversely impacted by implementation of any of the alternatives.

Transportation.

Existing Conditions

The West Bank of Jefferson Parish is separated from the East Bank by the Mississippi River, which dissects the parish east to west. Access to the East Bank and the City of New Orleans is provided by the Huey P. Long Bridge on the west and the Greater New Orleans Bridge on the east. The two bridges are connected by the West Bank Expressway (Business Route U.S. Highway 90). This heavily traveled roadway provides access to the major population centers on the West Bank. The other two primary east-west arteries on the West Bank are Fourth

Street (Louisiana Highway 18), mainly a truck route between the expressway and the river, and Lapalco Boulevard which provides access to the residential areas to the south. The major roadways providing north-south access throughout the West Bank are: Belle Chasse Highway (Louisiana Highway 23), Manhattan Boulevard, Peters Road and Destrehan Avenue (these last two immediately parallel the Harvey Canal), Barataria Boulevard (Louisiana Highway 45), and U.S. 90, which connects the West Bank Expressway to the Huey P. Long Bridge.

Improvements to the West Bank traffic system involve the proposed improvements to the West Bank Expressway and adjacent roadways, as addressed in the West Bank Expressway Final Environmental Impact Statement (La/DOTD, 1977). These improvements will meet the needs of both current and projected traffic levels on the West Bank. The plans involve upgrading the expressway from a four-lane to a six-lane limited access highway, with interchanges at existing major cross-streets between U.S. 90 on the west and Terry Parkway on the east. Between the Greater New Orleans Bridge and Drake Avenue the expressway will be elevated, with dual high-level bridges across the Harvey Canal. For the 9.7-mile length of the expressway, existing parallel service roads will be extended, widened, and strengthened for heavier traffic, and converted to one-way operations. Service roads will be tied to the Harvey Canal Tunnel, which will be used for local traffic. The expressway improvement project is currently under construction, with completion anticipated in 1984. Also underway and scheduled for completion in about 1984 is a six-lane vehicular bridge across the Mississippi River and parallel to the Greater New Orleans Bridge (Perret, pers. comm.).

Waterways servicing the West Bank are the Mississippi River and the Harvey Canal. The latter, which traverses the parish north to south from the river to Lafourche Parish, is part of the larger Gulf Intracoastal Waterway from Florida to Louisiana. It provides an inland passage for ocean-going vessels.

Bus transit on the West Bank is provided by Westside Transit Lines, with Continental Trailways and Greyhound buses providing inter-parish and interstate service. Bus routes on the West Bank are oriented along Fourth Street and the West Bank Expressway, and in the northeast sector from Gretna to the Orleans Parish line. There is no rail passenger service to the West Bank.

Primary air carrier service to the West Bank is via New Orleans International Airport (Moisant Field), located north of the Mississippi River on the East Bank of Jefferson Parish. Two other airfields are near the study area. Westwego Airport in the City of Westwego provides a water strip for general aviation aircraft. Callander Field in Plaquemines Parish is a U.S. Navy facility.

Future Conditions Without the Project

Implementation of the No Action alternative will not directly affect transportation requirements of the West Bank. The expected growth in traffic from changes in population will occur notwithstanding the No Action alternative. There may, however, be a slowing of growth patterns and, hence, traffic effects if the No Action alternative is implemented.

Analysis of Alternatives

Implementation of any of the alternatives would create traffic effects during the construction period. Traffic would be temporarily affected in areas where force main construction occurs and especially at major intersections. These disruptions would be temporary, however; and upon completion of the construction, normal traffic flow could be expected to resume.

In addition to the construction effects, there may be effects due to implementation of any of the alternatives which involve the U.S. 90 site (Alternatives E, F, G, H, I, J and K). The Louisiana Department of Transportation and Development is currently undertaking an analysis of alternative corridors for a bridge connecting the East and West Banks of Jefferson Parish. Although the study is at a preliminary alternative corridor selection level, one of the proposed routes could potentially affect the U.S. 90 site. One of the proposed bridge crossings is parallel and downstream from the Huey P. Long Bridge. The approach and access to the proposed bridge under this routing would be through Bridge City, approximately parallel to Oak Avenue and Wiegand Drive, and continuing south parallel to the current route of U.S. 90. This corridor alignment would pass through portions of the proposed U.S. 90 site. Based on preliminary analysis, the right-of-way through this area would be approximately 175 feet (Rozek, pers. comm.). The corridor alignment could be adjusted to accommodate a regional or smaller plant at the U.S. 90 site, or the facility siting for the sewage treatment facility could be altered to accommodate the corridor right-of-way (Mojgani, pers. comm.). If the U.S. 90 alternative is selected, this consideration would be addressed in the final design of the facility. A separate EIS will be prepared for the proposed bridge project.

In addition to the U.S. 90 site, the Churchill Farms area may be affected by traffic considerations on the West Bank. Currently, Lapalco Boulevard terminates just east of the proposed Churchill Farms aquatic treatment site. The parish projects completion of this roadway sometime during late 1982. The northeast portion of Churchill Farms could be affected by this road. Potentially, completion of this portion of Lapalco Boulevard to U.S. 90 westbound into the South Avondale area would provide access and be the basis for development of the area around the proposed Churchill Farms site.

The Kelvin Tract (Alternative J) may also be affected by road improvements. South Kenner Road is projected to extend to U.S. 90 and may require a portion of the southwest quadrant of the tract. U.S. 90 is also scheduled for upgrade to limited access, which may require additional right-of-way (Bordelon, pers. comm.). Since the Kelvin Tract involves over 700 acres, siting of the sewage treatment plant should be able to accommodate these road requirements. This consideration could be addressed in the final design. None of the other sites would be affected by the proposed road routings. In addition to the direct effects on the potential treatment plant sites, indirect effects on the road network may result from implementation of any of the alternatives. The road network on the West Bank would have to be expanded at a rate sufficient to serve the growth in users. The potential need for the identified improvements on the West Bank could be accelerated due to implementation of the alternatives.

6.2.8 Energy and Resources

The major resources required for construction of any of the final alternatives include concrete, steel, wood, electricity, and fuels such as gasoline and diesel oil. The relative quantities of these materials required are reflected in the capital cost estimates developed by the Facilities Plan Engineer for each alternative. A ranking of the alternatives based on short-term resources and energy requirements would be similar to that for capital costs.

Annual energy and chemical requirements for conveyance system pumping, including effluent pumping where necessary, and treatment plant operation have been estimated by the Facilities Plan Engineer. Relative differences in alternative energy requirements (Table 6-19) are primarily due to differences in

Table 6-19

ELECTRICAL ENERGY REQUIRED FOR OPERATION OF THE FINAL ALTERNATIVES

ALTERNATIVE	ANNUAL ELECTRICITY REQUIREMENT (10^6 KWH/yr)
A	23.31
B	24.13
C	28.63
D	25.76
E	25.18
F	21.53
G	24.01
H	26.86
I	25.13
J	21.61
K	22.26
L (No Action)	3.7

Source: URS Company, 1981.

their conveyance systems. Sludge gas energy recovery is planned for all secondary and advanced treatment facilities. Chemical requirements (Table 6-20) will be higher for advanced treatment plants because of required disinfection.

6.2.9 Land Use

Land use considerations are a major concern in the siting of wastewater sewer facilities. Developable land on the West Bank of the parish is limited due to previous development or wetlands designation from the U.S. Army Corps of Engineers or EPA. Although regional considerations of land use are important, the major effects from construction and operation of a treatment system will involve site-specific concerns. Thus, this analysis is primarily directed to site-specific land use, community attitudes, and aesthetic concern.

Existing Conditions. The West Bank of Jefferson Parish is divided into a northern portion near the Mississippi River that is primarily urbanized, and a rural, wetland southern area. Residential growth is expected to require much of the vacant land still available for development. Commercial development has been concentrated on the major traffic arteries, primarily the West Bank Expressway and Lapalco Boulevard. Industrial activity is primarily located along the Mississippi River and the Harvey Canal.

Land use plans and policies developed by federal and state agencies and Jefferson Parish act to control development on the West Bank. The primary concern involves identifying areas of potential growth on the West Bank. The two major considerations involve a prohibited service area and a hurricane protection levee. Resolution No. 37936, adopted by the Jefferson Parish Council, established an area beyond which the parish would not provide water service without prior approval of the U.S. Army Corps of Engineers and the EPA. This resolution was based on the November 30, 1979 agreement between Jefferson Parish and EPA, and noted by the U.S. Army Corps of Engineers, for protection of wetland areas from development. The non-service areas are delineated in the agreement (see copy in appendix).

The other major land use consideration is the West Bank Hurricane Protection Levee. It is designed to provide hurricane and flood protection to the low-lying areas of the West Bank. In mid-1981, Jefferson Parish applied for an U.S. Army Corps of Engineers permit to build a levee which would incorporate a series of floodgates that would remain open and allow the wetlands to remain wet.

Table 6-20

FINAL ALTERNATIVE CHEMICAL REQUIREMENTS

ALTERNATIVE	LBS. POLYMER/YEAR	TONS CHLORINE/YEAR
A	43,800	0
B	43,800	1024
C	43,800	0
D	33,600	0
E	43,800	785
F	43,800	0
G	43,800	0
H	43,800	0
I	43,800	0
J	43,800	0
K	43,800	0
L (No Action)	22,000	754

Source: URS Company, 1981.

During hurricanes, the floodgates would be closed to block the flow of tidal waters to the low-lying areas. The alignment of the levee would probably become a "no growth line" beyond which no construction or development would be allowed.

In order to provide a basis of comparison, the six potential treatment plant sites were evaluated according to present and proposed land uses, community attitudes, and aesthetic considerations.

The Cousins North site is within an area zoned for single and two family uses, and land adjacent to the west is zoned Medium Density Residential in the 1995 Land Use Proposal (Regional Planning Commission, 1978). Since houses are nearby, there may be some objection from residents of the housing development to the west. Should the area be chosen as a site, appropriate site planning, including buffer areas and screening, should be utilized to mitigate adverse effects.

Proximity of the Cousins North site to the Harvey Canal may also present a potential constraint to development of a sewage treatment facility on this site. As industrial development proceeds on the West Bank of the parish, land located along the Harvey Canal will become increasingly valuable for industrial purposes. Development of the Cousins North site for a treatment facility would preclude its use for industrial development purposes.

The Timberlane site is currently zoned as "unrestricted area" and appears to be within an area zoned for Parks and Recreational Uses in the 1995 Land Use Proposal (Regional Planning Commission, 1978). This area is apparently to be a buffer zone between the shipping and industrial uses along the east side of the Harvey Canal and the proposed Low Density Residential to the east.

The proposed zoning could preclude use of the property for sewage treatment facilities. Also, the existing pipe storage area is being expanded to the east, and much of the previous solid waste disposal site has been leveled and staked for use as pipe storage. Current contractual arrangements, relative to use of the old solid waste disposal site for pipe storage, could also be a constraint to implementing use of the Timberlane site for a sewage treatment facility.

There may also be a conflict with the uses designated for Lake Timberlane Estates, a proposed 1,650-acre residential, commercial and industrial development to be located between the Harvey Canal on the west and Bayou Barataria and Bayou Fatima on the north, south, and east. Of particular concern are two areas: one designated residential, and one reserved for playgrounds, parks, churches, and schools. These two areas are located west of the southern extension of Manhattan Boulevard and east of the existing industrial area, as is the site proposed for the sewage treatment facility.

Even though there are no land use plans for the Hero Cut-off area, development constraints exist because the site has been designated as a wetland by the U.S. Army Corps of Engineers (see appended letter).

The southern area of Churchill Farms is currently zoned unrestricted and projected as being "undeveloped prior to 1995" in the 1995 Land Use Proposal, while the area to the north and west is proposed for Low Density Residential development (Regional Planning Commission, 1978).

The greatest constraint to the use of the Churchill Farms site is the relatively large acreage required to accommodate the proposed aquatic treatment process. In addition, preliminary analysis by the U.S. Army Corps of Engineers has indicated that the site may contain areas classified as wetlands (see appended letter).

The parish is currently in the process of completing a two-lane extension of Lapalco Boulevard to U.S. 90. Potentially, completion of this extension would open the proposed site for future development prior to 1995.

Utilization of the land comprising the U.S. 90 site for a sewage treatment facility would be compatible with existing and planned commercial designations. If the site is chosen, appropriate site planning, including buffer areas and screening, should be utilized to minimize adverse effects to the nearby residential areas.

In addition, as previously discussed, the U.S. 90 site may be affected by development of another bridge crossing the Mississippi River. Although these plans are in a preliminary stage of analysis, development of this crossing could conflict with use of the U.S. 90 site for a sewage treatment facility. If the bridge routing affecting this site is adopted, the sewage treatment facility may have to be designed to accommodate the approach road.

The parish has received a permit from the state allowing them to use 125 acres of the 763-acre Kelvin Tract as a solid waste disposal site. Currently, the western portion of the tract north of U.S. 90 is being used for this purpose. The greatest constraint at the proposed Kelvin Tract site is likely to involve the distance of the site from major population centers on the West Bank. Also, all but the southwestern quarter of the Kelvin Tract has been determined to be wetland by the EPA (see COE appended letter).

Future Conditions Without the Project. One of the primary land use concerns on the West Bank involves the amount of land available for development. The No Action alternative would not affect the amount of land available for development. If the No Action alternative is implemented, residents would continue to be faced with problems of sewer back-up during periods of high rainfall. In order to alleviate this problem, the parish may have to curtail or slow, and perhaps ultimately limit, development of residential areas on the West Bank.

The slowing of growth on the West Bank could lead to a series of problems including, among others, a slow growth in the economic base of the area, a resultant slow down in employment and income growth, and a slower rate of increase in revenue from sales taxes. Conversely, a limited amount of land available for development would act to inflate property values, especially for residential units.

Analysis of Alternatives

The overall effect from implementation of any of the alternatives would be to preclude the use of the particular area from other uses. In order to compare the land use effects from each alternative, evaluation criteria were developed. The criteria included: quantity of land needed at each site, total amount of land for each alternative, and compatibility with existing and planned uses. Relative to "compatibility" there are several other distinct areas of concern, including community attitudes regarding the location of facilities and the alleviation of present sewerage problems, plus aesthetic considerations such as sight and odors.

Due to the relative scarcity of developable land on the West Bank, land requirements greater than 35 acres (the amount needed for a regional facility) could be perceived as adversely impacting the available supply. Such adverse effects would occur with the proposed aquatic treatment site, and where a combination of sites is utilized to create an alternative. Table 6-21 shows the amount of land required at each site for each alternative.

Where nearby existing uses are residential or commercial, establishment of a sewage treatment facility in the vicinity would, most likely, be perceived as an incompatible use. In some instances, however, such incompatibility could be mitigated by appropriate plant design to minimize odor, visibility, potential hazards, and the likelihood of trespassers. Location of a treatment plant in an area of existing industrial use would be the most likely acceptable site.

Table 6- 21

ALTERNATIVES AND ACREAGE REQUIRED

	PER PLANT		PER ALTERNATIVE	
ALTERNATIVE AND DESCRIPTION	ACRES REQUIRED	ACRES PREFERRED	TOTAL ACRES REQUIRED	TOTAL ACRES PREFERRED
A - Regional secondary at Cousins North	35	75	35	75
B - Regional secondary at Hero Cut-off	35	75	35	75
C - Regional secondary at Timberlane	35	55	35	55
D - Zone I aquatic at Churchill Farms	740	856		
Zones II & III secondary at Cousins North	31	47	771	903
E - Zone I secondary at U.S. 90	19	32		
Zones II & III secondary at Hero Cut-off	31	47	50	79
F - Zone I secondary at U.S. 90	19	32		
Zones II & III secondary at Cousins North	31	47	50	79
G - Zone I secondary at U.S. 90	19	32		
Zones II & III secondary at Timberlane	31	47	50	79
H - Regional secondary at U.S. 90	35	75	35	75
I - Zones I & II secondary at U.S. 90	26	43		
Zone III secondary at Timberlane	22	35	48	78
J - Zone I secondary at Kelvin Tract	13	22		
Zone I secondary at U.S. 90	11	17		
Zones II & III secondary at Cousins North	31	47	55	86
K - Zone I secondary at U.S. 90	19	32		
Zone II secondary at Cousins North	24	44		
Zone III secondary at Timberlane	22	35	65	111
L - No Action	0	0	0	0

Source: VTN Analysis, 1981.

Where planned uses are residential or commercial within the vicinity of the proposed site, the facility would create an adverse impact. This could be mitigated in some instances, utilizing appropriate site layout, plant design, landscaping, and buffer zones.

Aesthetic considerations are related to land use and community attitude considerations and involve facility visibility, congruence with the surrounding environment, and perceived potential for odor and for accidental occurrences such as overflows. Many perceived adverse aesthetic impacts could be mitigated through appropriate facility location, design and landscaping, and through adequate dissemination of information to the public.

Community attitudes will be shaped by all of the environmental considerations previously discussed, plus virtually all other factors related to specific site locations and to the project in general. However, negative attitudes are most likely to develop relative to the environmental considerations discussed above. Potential adverse effects relative to community attitudes would likely be mitigable through appropriate facility design and community involvement in the planning process.

The alternatives were analyzed for each of these elements and rated in matrix form. The ratings noted on the matrix (Table 6-22) are N, A, A/M, and U. The "N" denotes "none," or that no potential adverse effects are anticipated. The "A" indicates that adverse effects are anticipated, and the "A/M" indicates that anticipated adverse effects are believed to be mitigable. Costs of such mitigations have not been considered as yet. The designation "U" applies only to the determination of the site as a wetland by the U.S. Army Corps of Engineers. This designation is utilized only for Churchill Farms and the Kelvin Tract, both of which may contain wetland areas (see appended COE letter).

The various combinations of plant sites and treatment processes were evaluated according to the various environmental considerations. Previously discussed for purposes of this analysis, it is assumed that the various environmental consideration rated "A" could be a severe constraint to development of the plant site/treatment process being considered. Therefore, any number of potentially mitigable adverse effects (A/M) would be preferable to even one "A".

Table 6-22 presents the analysis of each alternative and Table 6-23 groups the alternatives by environmental effects.

Table 6-22

ALTERNATIVE ANALYSIS RELATIVE TO LAND USE CONSIDERATIONS

	ENVIRONMENTAL CONSIDERATIONS					
ALTERNATIVE AND DESCRIPTION	Quantity Of Land Required	Impacts To Existing Uses	Impacts To Planned Uses	Impacts To Wetland	Aesthetic Considerations	Community Attitudes
A - Regional Secondary at Cousins North	N	A/M	A/M	N	A/M	A/M
B - Regional Secondary or Advanced at Hero Cut-off	A	N	N	A	N	N
C - Regional Secondary at Timberlane	N	A	A	N	A/M	A/M
D - Zone I Aquatic at Churchill Farms	A	N	N	U	A/M	A/M
Zones II & III Secondary at Cousins North	N	A/M	A/M	N	A/M	A/M
E - Zone I Secondary at U.S. 90	N	A/M	A/M	N	A/M	A/M
Zones II & III Secondary or Advanced at Hero Cut-off	A	N	N	A	N	N
F - Zone I Secondary at U.S. 90	N	A/M	A/M	N	A/M	A/M
Zones II & III Secondary at Cousins North	N	A/M	A/M	N	A/M	A/M
G - Zone I Secondary at U.S. 90	N	A/M	A/M	N	A/M	A/M
Zones II & III Secondary at Timberlane	N	A	A	N	A/M	A/M
H - Regional Secondary at U.S. 90	N	A/M	A/M	N	A/M	A/M
I - Zones I & II Secondary at U.S. 90	N	A/M	A/M	N	A/M	A/M
Zone III Secondary at Timberlane	N	A	A	N	A/M	A/M
J - Zone I Secondary at Kelvin Tract	N	N	N	U	N	N
Zone I Secondary at U.S. 90	N	A/M	A/M	N	A/M	A/M
Zones II & III Secondary at Cousins North	N	A/M	A/M	N	A/M	A/M
K - Zone I Secondary at U.S. 90	N	A/M	A/M	N	A/M	A/M
Zone II Secondary at Cousins North	N	A/M	A/M	N	A/M	A/M
Zone III Secondary at Timberlane	N	A	A	N	A/M	A/M
L - No Action	N	N	N	N	N	N

Impact Designations: N = none anticipated; A = adverse;
A/M = adverse but mitigable; U = unknown at this time.

Source: VTN Analysis, 1981.

Table 6-23

ALTERNATIVES GROUPED BY LAND USE ENVIRONMENTAL EFFECTS

RANKING	ALTERNATIVE	DESCRIPTION
1	A	Regional secondary at Cousins North
	H	Regional secondary at U.S. 90
	F	Zone I secondary at U.S. 90 Zones II & III secondary at Cousins North
	J	Zone I secondary at Kelvin Tract Zone I secondary at U.S. 90 Zones II & III secondary at Cousins North
2	B	Regional secondary or advanced at Hero Cut-off
	D	Zone I aquatic at Churchill Farms Zones II & III secondary at Cousins North
	E	Zone I secondary at U.S. 90 Zones II & III secondary or advanced at Hero Cut-off
3	C	Regional secondary at Timberlane
	G	Zone I secondary at U.S. 90 Zones II & III secondary at Timberlane
	I	Zones I & II secondary at U.S. 90 Zone III secondary at Timberlane
	K	Zone I secondary at U.S. 90 Zone II secondary at Cousins North Zone III secondary at Timberlane

Source: VTN analysis, 1981.

The analysis indicates that location of a regional facility at Cousins North (Alternative A) or U.S. 90 (Alternative H) would result in the least adverse effects. Alternative F would be similar since it involves facilities at both sites. However, the amount of land necessary with two sites is greater than that required for one facility. A similar condition exists for Alternative J, where three sites are involved. The potential adverse environmental considerations associated with these alternatives appear to be mitigable at this time.

The next level of alternatives (Alternatives B, D, and E) all include one environmental consideration which would be a severe constraint to development: either the wetland designation of the Hero Cut-off site or the amount of land required for aquatic treatment at Churchill Farms.

The third ranked alternatives (Alternatives C, G, I and K) involve two environmental considerations, compatibility with existing uses and planned uses, which would be severe constraints to development.

6.3 LAFITTE AREA ALTERNATIVES

6.3.1 No Action Alternative

For reference purposes it is useful to consider what would happen if no improvements are made to the existing wastewater management systems in Lafitte. Due to continuing development, the amount of wastewater produced will increase and would eventually be discharged from septic tanks to the surrounding bayous. With the inability of septic tanks to operate properly within the Lafitte area, the amount of raw or partially treated sewage discharged to the bayous will increase. Water quality in the bayous and drainage system can be expected to continue to deteriorate. Failure to implement improvements may affect botanical and zoological elements of the bayous due to increasingly poor water quality. Of particular concern are the oyster growing waters in the area. Therefore, the No Action alternative is not considered feasible.

6.3.2 Lafitte Area Study Alternative Environmental Impacts

The major beneficial impacts of the proposed advanced wastewater treatment plant are as follows:

- † Water quality of streams in the Lafitte area will be enhanced by the removal of raw and partially treated sewage discharges to these streams and the aesthetic appearance of the streams will also improve.
- † Aquatic biota of the area streams will benefit from the removal of septic tank and raw sewage discharges.
- † Existing air quality will be enhanced due to the elimination of raw sewage discharges and septic tank odors; plus the project would eliminate the need for septic tanks and the health and pollution problems associated with overloaded or improperly built septic tank systems.

Adverse impacts associated with the project would include the following:

- † Project construction would cause some nuisance conditions for area residents in the form of dust and noise generation and traffic disruption.
- † Construction of the project will cause the destruction of approximately four acres of forested land.
- † There would be temporary disruption of drainage ditches during construction.
- † Vegetation would be disturbed during sewer line construction.

6.3.3 Regional Alternative Environmental Impacts

The alternative of pumping the wastewater from the Lafitte area to a regional West Bank plant would have the same major environmental impacts of the local Lafitte plant option described above. The water quality, aquatic biota, and air quality of the area will be enhanced. No impacts are anticipated on cultural resources in the area. The regional option would have similar adverse impacts such as dust and noise generation, traffic disruption, drainage ditch and vegetation disruption. A smaller amount of forested land would be disturbed since, in lieu of a Lafitte area plant, a pumping station would be built on the same site. The regional option does, however, require the construction of approximately six miles of force main. It is anticipated that the majority of this line would be constructed in the roadway or its shoulder.

6.4 ENVIRONMENTAL CONSEQUENCES OF EPA'S ALTERNATIVES

Should EPA decide to fund one of the action alternatives, the environmental impacts described above would occur. These impacts include, among others:

improvement of area water quality due to upgrading of existing treatment plants; generation of fugitive dust and exhaust emissions; adverse short-term noise impacts; and minor disruption of terrestrial habitat.

With regard to mitigation for impacts on cultural resources in the project area, the grantee will be required to follow certain procedures. These procedures are discussed on page 6-48. With regard to mitigation for impacts on wetlands, EPA is considering the conditioning of any construction grants to disallow service to those areas delineated in the November 30, 1979 agreement between EPA and Jefferson Parish. See the appendix for a description of these areas.

EPA's concerns relate to the loss of these valuable areas not only from a biological resource standpoint, but also, and more importantly, from a public health and safety standpoint in that these areas are subject to flooding from stormwater surges and hurricanes.

Should EPA decide to deny funding for this project, the impacts of the No Action alternative would possibly occur. These impacts include the continued deterioration of area water quality in the Barataria Basin. Additionally, since the parish is required to improve its treatment works in accordance with EPA's Administrative Orders (as discussed in Chapter 4 - Purpose and Need), any decision by EPA to deny funding would not remove the parish's responsibility to upgrade its facilities. Without improvements being made, EPA could seek enforcement action (i.e., the levy of fines) against the parish.

7. COORDINATION

In accordance with EPA regulations a full-scale public participation program was developed to provide for, encourage, and assist public involvement in the facilities planning process. This public participation program was designed to: incorporate the public's understanding of community goals and objectives regarding the project and their views of particular problems within the community that might affect the project; provide a forum for public input into alternative selection; insure that adequate cost information was provided to the public; obtain voter support through better understanding of the project goals and the means for achieving them; and provide a forum for open public discussion of controversial issues that might arise concerning the EIS.

These goals were met through public meetings, information releases, the establishment of information depositories throughout the planning area, and the formation and utilization of a Citizens Advisory Committee (CAC).

7.1 PUBLIC PARTICIPATION PRIOR TO RELEASE OF DRAFT EIS

Scoping Meeting. EPA held a formal Scoping Meeting in Jefferson Parish on April 10, 1980. Notice of the meeting was published in the Times-Picayune on March 8, 1980 and in the Federal Register on March 12, 1980. The purpose of this meeting was to receive citizen input regarding issues of significant concern that should be given consideration in the environmental impact statement (EIS). Approximately 15-20 people attended the meeting and five individuals made oral statements.

Citizens attending the meeting expressed concerns about the amounts and types of industrial discharge into the sewer system; raw sewerage overflows in their homes and streets; and the need for zoning laws compatible with surrounding environs, especially considering the existing overloaded wastewater treatment facilities.

Two letters were received in response to EPA's Notice of Intent to prepare the EIS. These were from the U.S. National Park Service and the Louisiana Office of Forestry, and concerned the relationship between the project and the Jean Lafitte National Historic Park and forested lands within the planning area, respectively. Copies of these letters are appended.

Other concerns brought out during EPA's scoping process are listed in Table 7-1.

Table 7-1

CONCERNS EXPRESSED DURING SCOPING PROCESS

POSSIBLE ADVERSE EFFECTS

1. Impact on archaeological sites
2. Impact on endangered species
3. Impact of industrial waste discharges into sewer system
4. Impact on Jean Lafitte National Historic Park
5. Impact on surface water quality
6. Odor problems associated with wastewater treatment facilities

PLANNING ISSUES

1. Geographical area of the EIS
2. Incorporation of recreation facilities into facilities plan
3. Time needed for completion of the facility plan
4. 20-year projections of future development as well as past and present land development
5. Population projections
6. Village of Jean Lafitte's facility plan relative to the West Bank facility plan

OTHER ISSUES

1. Bond issues
2. Inadequate publicity and/or advertisement of the Scoping Meeting

Citizens Advisory Committee. A twelve-member Citizens Advisory Committee was formed by the parish to provide input into the planning process and make recommendations to the decision-making officials regarding the alternative(s) preferred by the CAC. The members of this group were responsible for gathering information from the general public and presenting it to parish officials, study consultants and the EPA, and for providing information to the public obtained through participation in the CAC meetings. The committee members reflected a balanced interest of persons affected by the project, and included approximately equivalent numbers of individuals from the categories of: private citizens with no greater financial interest in the project than that of the average homeowner, taxpayer, or consumer; public interest groups; public officials; and citizens or representatives of groups with substantial economic interest in the project. See Table 7-2 for a list of CAC members including the category each represented.

Five CAC meetings were held. The minutes from these meetings are available at the depositories. Major concerns discussed at the meetings are listed in Table 7-3 along with an indication of sections within the EIS that address these concerns. A one-plant concept at the U.S. 90 site was favored by nine of the eleven CAC members present at the July 15, 1981 meeting.

Public Meetings. Four public meetings were also held. Complete summaries of comments received and the parish's responses are contained in the depositories. Major concerns are included in Table 7-4 and sections within the EIS that Address these issues are indicated. The index also provides guidance in locating discussions of major issues.

7.2 ISSUES AND THEIR DISPOSITION

During the course of the EIS's preparation approximately 25 letters were received for inclusion in the official record. The concerns expressed in these letters were basically related to hydrology, soils, and other unique features of the planning area; the consideration of citizen-suggested alternative(s); site specific conflicts; and discharge impacts on drinking water sources.

Existing conditions in the planning area are described in Chapter 6 of this EIS. Included, among others, are the topics of surface and groundwater hydrology, soils, endangered species, wetlands, and cultural/historic resources. Impacts of the project on these elements are also included in the same chapter.

Citizens expressed interest in a three-plant alternative, with one advanced treatment plant servicing each zone (see Figure 5-1 for delineation of the zones

Table 7-2

CITIZENS ADVISORY COMMITTEE

201 West Bank Jefferson Parish Wastewater Facilities

ECONOMIC INTEREST	PUBLIC OFFICIALS	PUBLIC INTEREST	PRIVATE CITIZENS
Wilton J. Dufrene Harvey Canal Industrial Association Post Office Box 753 Harvey, LA 70059	Lydia Jemison Jefferson Parish Planning Department 3330 N. Causeway Blvd. Suite 300 Metairie, LA 70002	Robert Hamilton Concerned Citizens of Marrero 2200 Sauvage Avenue Marrero, LA 70072	Frank Ehret, Jr. Jefferson Parish School Board, Retired 5048 Ehret Road Marrero, LA 70072
R. Alan Bartlett Realtor, Land Development 701 Madison Street Gretna, LA 70053	Emanuel Brown Jefferson Parish Community Development Department 3330 N. Causeway Blvd. Room 305 Metairie, LA 70002	Elsie Czernia 688 W. Marlin Court Gretna, LA 70053	Samuel D. Wilder Board of Commissioners Port of New Orleans 327 Fairfield Avenue Gretna, LA 70053
Daniel A. Pouwels Chamber of Commerce West Bank Council 999 Barataria Blvd. Marrero, LA 70072	Mr. Albert Creppel 6th Ward Constable Box 410A Barataria, LA 70037	Jan Francis 2449 Park Lane Gretna, LA 70053	Annie LeBlanc 6413 River Road Waggamen, LA 70094

Table 7-3

ISSUES OF CONCERN RAISED AT CAC MEETINGS

ISSUE	SECTION
Existing conditions of treatment plants	4.1.1
Fate of the Marrero Oxidation Pond	4.1.3
Basis for 25-year population projections	6.2.7
Interim accommodation of new development	4.1.3
Future sewer service limits	5.1.2
Buffer zones around treatment plant sites	6.2.9
Relationship between treatment levels and discharge points	5.1.2
Advanced treatment to the Mississippi River	5.1.2, 6.2.2
Effects of effluent on water quality of the Mississippi River	6.2.2
Sludge management	5.1.2
Number of treatment plant sites	5.1.3, 5.1.4
Malfunction of one regional facility	6.2.2
Cost and safety factors of one- versus two-plant concepts	5.1.3, 5.1.4, 5.1.5, 6.2.2

Table 7-4

ISSUES OF CONCERN RAISED AT PUBLIC MEETINGS

ISSUE	SECTION
Existing sewer capacity and safety limits beyond that capacity	4.1.1
Infiltration quantities in existing system	4.1.5
Illegal and other hookups to existing system	4.1.4
Quality of effluent from existing treatment plants	4.1.1, 6.2.2
Industrial input to existing system	5.1.2
Interim improvements to existing treatment plants	4.1.3
Planned system capacity versus population projections and flows	5.1.1, 5.1.2
Planned discharge relative to LA Water Quality Management Plan	6.2.2
Regional (one-plant) considerations	5.1.3, 5.1.4, 5.1.5
Three-plant concepts considered in facility plan	5.1.3, 5.1.4, 5.1.5
River discharge of secondary treatment alternatives	5.1.2, 6.2.2
Effluent from land treatment alternatives	5.1.2
Treatment plant sites considered in the study	5.1.4
Discharge points relative to water intake locations	6.2.2
Flooding problems at the final sites	6.2.2
Soil conditions and subsidence problems	6.2.1
Conflicts with proposed new bridge crossing in Jefferson Parish	6.2.9
Acreage required for treatment plant(s)	5.1.4
Relocation of residences	5.1.4, 6.2.9
River discharge limitations versus those of canal/marsh discharge	6.2.2
Impacts on flora and fauna	6.2.5
Freshwater diversion impacts on wetlands	6.2.5

within the planning area) and effluent discharges to the parish canal system. They perceived one- and two-plant concepts as hazardous in the event of a breakdown in the system. The three-plant advanced treatment alternative was considered and, based on cost, did not qualify as one of the top 20 alternatives. In addition, environmental analysis indicated that a one- or two-plant scheme would be slightly better environmentally than a three-plant concept.

Regarding the final sites considered for treatment plant locations (see Figure 5-2 for locations), some citizens voiced concern about the planned uses of the Timberlane and Cousins North sites. They recommended that if presently zoned industrial land were used for new wastewater facilities, the loss of this industrial acreage should be offset by rezoning an area of equal size for industrial use within a reasonable distance of the plant site. Alternatives involving the Churchill Farms and Hero Cut-off sites elicited concern from other citizens relative to the quantity of land required in the first instance, and to the wetlands status of the latter site. Opposition to the U.S. 90 location was based on the proximity of this site to an old, established community that is already concerned about the possible siting of a new Jefferson-to-Jefferson bridge across the Mississippi River in their area. These citizens felt that the cumulative impacts of both a new bridge and a wastewater treatment facility would be extremely adverse to their community. On the other hand, positive response came from the industrial community regarding use of the U.S. 90 site. There was no opposition expressed toward the use of the Kelvin Tract for siting of wastewater treatment facilities. A fact sheet detailing the site selection process is on file in the aforementioned public informational depositories. See the index for further details on site selection within this EIS.

In the early stages of the EIS process, citizens expressed misgivings about possible degradation of the Barataria Basin should effluent discharges be to the south via the parish canal system. There were also questions about the possibility of providing advanced treatment for discharges to the river, specifically because the Mississippi River is the area's source of drinking water. This issue, the effects of effluent discharge on drinking water quality, emerged again in the latter stages of the EIS's preparation. It was explained that, while guidelines require advanced treatment if discharge is to the canal system, only secondary treatment is required for discharge to the river, and the cost of advanced treatment in the latter instance would not be eligible for federal funding. Engineering and environmental analyses indicated that the impacts associated with either advanced discharge to the south or secondary discharge to the river would be negligible. Refer to the index for the location of further discussions on these issues.

Citizens Information Depositories. The Jefferson Parish public libraries listed below retained copies of all public meeting minutes, responsiveness summaries, public hearing transcripts, fact sheet(s), and other technical information relative to the 201 study for the West Bank of Jefferson Parish. Included within the technical information were all data provided by the consultants to attendees at CAC and public meetings.

Jefferson Parish Public Libraries

† Marrero Branch
626 Avenue A
Marrero, LA

† Lafitte Branch
Lafitte Volunteer Building
Main Road
Lafitte, LA

† Terrytown Branch
680 Heritage Avenue
Gretna, LA

† Westwego Branch
222 Fourth Street
Westwego, LA

In addition to the above, there were nine other depositories within the parish government. These included, among others, the Department of Public Utilities, the Department of Sewerage, and the Environmental and Development Control Department.

Announcement Mailings. Over 110 announcement mailings were made prior to each public meeting. Agencies and individuals on the list received copies of the parish's responsiveness summaries for each public meeting, as well as a fact sheet mid-way through the project concerning the site selection process.

Meetings Notices. Legal notice of each public meeting appeared in the Jefferson Parish Times/Democrat (official parish journal) prior to all meetings. These notices were 2½ by 4-inch ads. In addition, two large display ads (3½ by 6-inch and 5 by 7-inch) were placed in the West Bank Guide newspaper prior to the February 19, 1981 and July 16, 1981 public meetings.

Feature News Articles. Six feature news articles were printed in the Times Picayune/States Item newspaper. The dates and titles of these articles were as follows:

† September 27, 1980 - "EPA Meeting Down Drain"

† February 21, 1981 - "Marrero Sewage Plant's Cost Puts It at Top of Alternatives"

† February 21, 1981 - "Marrero Treatment Plan Called Cheapest"

† June 16, 1981 - "Sites Chosen in Jeff for Sewer Plant"

† July 17, 1981 - "2 Sewerage Plant Sites Urged by Consultants"

† August 11, 1981 - "Probable Sewage Plant Site Found"

Television Coverage. In mid-June, James Lawrence, Acting Director of Sewerage for Jefferson Parish, was interviewed by WDSU-TV (Channel 6). On July 16, 1981, WWL-TV (Channel 4) provided pre- and post-meeting coverage for the public meeting of that date.

7.3 ON-GOING COORDINATION

Chapter 9 lists agencies, organizations, and individuals with which coordination has been on-going and/or which will have an opportunity to review the draft EIS. In addition, approximately 68 persons on another mailing list maintained by the parish will be notified of the availability of the draft EIS for review at the public informational depositories. The Jefferson Parish Council will hold a special public hearing to receive public input prior to their selecting a parish-preferred alternative. Notice of the Public Hearing on the draft EIS will appear in the legal section of the local daily newspaper at least 45 days before the hearing is held and in a display ad in a local weekly newspaper one week before the hearing.

The draft facilities plan will be released approximately 14 weeks following the aforementioned Public Hearing. A Public Hearing Document will be prepared by the facilities plan engineers and made available for review at the depositories at about the same time that the draft EIS becomes available. A separate public hearing on the draft facilities plan is planned by the parish and the results of this hearing shall be considered by EPA prior to any final decision being made.

8. LIST OF PREPARERS

NAME	EDUCATION	RESPONSIBILITY
Environmental Protection Agency		
Spotts, Clinton B.	BS/Agricultural Education	Regional EIS Coordinator
Thomas, Norm	BS/Chemistry	Chief, EIS Preparation Section
Owsley, Darlene	BS/Biology	EIS Project Officer
Wossum, Gene	MS/Civil-Environmental Engineering	Project Engineer
Henderson, Rosemary	BA/Economics	Public Participation Coordinator

EIS Consultant

This EIS consultant was VTN Louisiana, Inc., Metairie, Louisiana. They were assisted by the following subcontractors: ESEI/EcolSciences Environmental Group of Rockaway, New Jersey; VTN Consolidated, Inc. of Irvine, California; and Aguilar & Associates, Inc. of Baton Rouge, Louisiana. The personnel from these firms involved in the preparation of the EIS are listed below.

NAME	EDUCATION	RESPONSIBILITY
VTN Louisiana, Inc.		
Flores, Michael W. (PE)	BS/Civil Engineering	Project Director
Forman, Sharon K.	BA/Technical-Creative Writing	Project Coordinator
Beavers, Richard C.	MA/Anthropology	Archaeologist
Schwarz, Teri J.		Graphics
Percle, Margaret M.		Word Processing
ESEI/EcolSciences, Inc.		
Harris, Jerome A. (PE)	MS/Sanitary Engineering	Project Manager/Senior Engineer
Hoehlein, William	BS/Wildlife Biology	Scientist
Ingram, Robert J.	Ph.D./Aquatic Biology	Senior Scientist
Larned, Carol	BA/Biology	Scientist

ESEI/EcolSciences, Inc. (continued)		
Moy, King K. (PE)	MS/Sanitary Engineering	Senior Engineer
Schory, Steven C.	MS/Sanitary Engineering	Engineer
VTN Consolidated, Inc.		
Sakaguchi, John L.	MBA/Marketing & International Business	Senior Economist
Trindle, Carolyn E.	MA/English	Socioeconomist
Aguilar & Associates, Inc.		
Aguilar, Rodolfo J. (PE)	Ph.D./Engineering	Project Manager
Rietschier, Dietmar R.	MS/Civil Engineering	Planner

9. EIS RECIPIENTS

Listed below are governmental agencies, public interest groups, and others which will receive a copy of the draft EIS; in addition, approximately 75 other groups and individuals are being notified of the EIS's publication and a number of these will receive a copy of the EIS.

FEDERAL

Soil Conservation Service
U.S. Department of Interior
U.S. Department of Commerce
U.S. Department of Transportation
U.S. Department of Agriculture
Water Resources Council
Agricultural Stabilization and Conservation Service
U.S. Department of Energy
Advisory Council on Historic Preservation
U.S. Department of Housing and Urban Development
U.S. Public Health Service
U.S. Department of Health and Human Services
National Park Service
Economic Development Administration
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
Senator Russell B. Long
Senator J. Bennett Johnston
Congresswoman Corrine C. (Lindy) Boggs

STATE

Louisiana Department of Agriculture
Louisiana Soil and Water Conservation Commission
Louisiana Attorney General's Office
Louisiana Department of Culture, Recreation and Tourism
Louisiana Governor's Office
Louisiana State Planning Office
Louisiana Health and Human Resources
Louisiana Department of Natural Resources

Louisiana Division of State Lands
Louisiana Office of Highways
Louisiana Office of Public Works
Louisiana Office of Planning and Technical Assistance
Louisiana Coastal Resources Program
Louisiana Office of State Clearinghouse
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Commerce

PUBLIC INTEREST GROUPS

Audubon Society
Ecology Center of Louisiana, Inc.
Sierra Club
Louisiana Wildlife Federation
Citizens for Clean Water
Concerned Citizens of Marrero
Jefferson Parish League of Women Voters
Woodland West Civic Association

OTHER

Greater Jefferson Port Commission
Louisiana Land and Exploration Company
Marrero Land and Improvement Association
Intracoastal Terminal, Inc.
J.J. Krebbs and Sons, Inc.

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11. GLOSSARY

Common Abbreviations

AWT - Advanced Wastewater Treatment
BOD - Biochemical Oxygen Demand
CAC - Citizens Advisory Committee
CAPDET - Computer Assisted Procedure for the Design and Evaluation of Wastewater Treatment Systems
CFR - Code of Federal Regulations
COD - Chemical Oxygen Demand
COE - (U.S.) Corps of Engineers
CWA - Clean Water Act
DNR - (Louisiana) Department of Natural Resources
DOE - (U.S.) Department of Energy
DOT - (U.S.) Department of Transportation
EDCD - (Jefferson Parish) Environmental and Development Control Department
EIS - Environmental Impact Statement
EPA - (U.S.) Environmental Protection Agency
EUAC - Equivalent Uniform Annual Cost
FIA - Federal Insurance Administration
HUD - (U.S.) Department of Housing and Urban Development
I/I - Infiltration/Inflow
mgd - Million Gallons Per Day
μg/l - Micrograms Per Liter
mg/l - Milligrams Per Liter
msl - Mean Sea Level
NAAQS - National Ambient Air Quality Standards
NEPA - National Environmental Policy Act
NH_3-N - Ammonia Nitrogen
NPDES - National Pollutant Discharge Elimination System
O&M - Operation and Maintenance
ppm - Parts Per Million
ppt - Parts Per Thousand
PRM - Program Requirements Memorandum
RPC - Regional Planning Commission for Orleans, Jefferson, St. Bernard and St. Tammany Parishes
SIP - State Implementation Plan
SMSA - Standard Metropolitan Statistical Area
SSES - Sewer System Evaluation Survey
TDS - Total Dissolved Solids
TKN - Total Kjeldahl Nitrogen
TPO_4 - Total Phosphate Ions
TSS - Total Suspended Solids
USDA - U.S. Department of Agriculture
WQMP - Water Quality Management Plan
WTP - Wastewater Treatment Plant

ABANDONED DISTRIBUTARY - distributary that has been filled by sediment resulting in the advancement of a delta.

ADVANCED WASTEWATER TREATMENT (AWT) - treatment beyond secondary that provides for discharges with BOD and TSS of less than 10 mg/l each, and/or total nutrient removal of greater than 50 per cent. Advanced wastewater treatment is also known as "tertiary" treatment and produces a high quality effluent.

AERATION - process which brings about contact between air and water by natural or mechanical means such as spray, bubbling, or agitation.

AEROBIC/ANAEROBIC MICROORGANISMS - microorganisms that either thrive on air (aerobic) or do not (anaerobic). Aerobic bacteria are more efficient at consuming organic matter, while anaerobic bacteria produce humus and gases such as foul-smelling methane.

AQUATIC TREATMENT - a method of advanced (or tertiary) treatment of sewage that has already been submitted to secondary treatment.

AQUIFER - a geologic formation containing water, usually a layer of permeable rock, sand or gravel.

ASSIMILATIVE CAPACITY - the ability of a stream or other body of water to accept input of various chemicals, nutrients and solids without subsequent significant change in the quality of the receiving waters.

BACTERIAL STANDARD #1 - (Primary Contact Recreation) based on a minimum of not less than five samples taken over not more than a 30-day period, the fecal coliform content shall not exceed a log mean of 200/100 ml, nor shall more than 10 per cent of the total samples taken during any 30-day period exceed 400/100 ml.

BACTERIAL STANDARD #3 - (Public Water Supply) the monthly arithmetic average of total coliform MPN (Most Probable Number) shall not exceed 10,000/100 ml, nor shall the monthly arithmetic average of fecal coliforms exceed 2,000/100 ml.

BACTERIAL STANDARD #4 - (Shellfish Propagation) the total monthly coliform median MPN (Most Probable Number) shall not exceed 70/100 ml, and not more than 10 per cent of the samples ordinarily exceed a MPN of 230/100 ml.

BASIN - a geographical area or region which is so sloped and contoured that surface runoff from streams and other natural watercourses is carried away by a single drainage system by gravity to a common outlet or outlets.

BIOCHEMICAL OXYGEN DEMAND (BOD) - the amount of oxygen required by bacteria to decompose (oxidize) a given amount of organic compounds to simple, stable substances. BOD tests are usually run for five days, hence BOD_5. BOD load is the pollutant content of a body of water, usually expressed in pounds of oxygen required to break down the pollutants.

BRACKISH MARSH - characterized by salinities of 10 to 20 ppt.

CHEMICAL OXYGEN DEMAND (COD) - a quick and approximate measure of oxidizable matter in water (in milligrams per liter), using a strong oxidizing agent instead of microbial life. COD can quickly identify water with very low or very high BOD potential.

CHLORINATION - application of chlorine to water or wastewater generally for the purpose of disinfection, but frequently for accomplishing chemical results such as chlorination of odor-producing compounds.

CLARIFIERS - mechanical devices for removal by gravity (settling out) of suspended particles in a liquid such as sewage.

COLIFORM - structurally and functionally resembling certain bacteria of the vertebrate intestine called Bacillus or Escherichia coli.

COLLECTION SYSTEM (SEWAGE) - each and all of the common lateral sewers within a publicly-owned treatment system which are primarily installed to receive wastewaters directly from facilities which convey wastewater from industrial structures or from private property.

CONVEYANCE SYSTEM - encompasses all of the interceptor sewers in a system.

DDT - a colorless, odorless, water-soluble crystalline insecticide that tends to accumulate in ecosystems and has toxic effects on many vertebrates and invertebrates.

DIGESTOR - a closed tank in a wastewater treatment plant that decreases the volume of solids and stabilizes raw sludge by bacterial action.

DISSOLVED OXYGEN (DO) - the oxygen available for respiration in aquatic systems.

ECOSYSTEM - system formed by the interaction of a group of organisms and their environment.

EFFLUENT - partially or completely treated wastewater or other liquid flowing out of a reservoir, basin, treatment plant, or part thereof.

EFFLUENT LIMITATION - means any restriction established by a state or EPA on quantities, rates or concentrations of chemical, physical, biological, and other constituents that are discharged from point sources into navigable waters, the waters of a contiguous zone, or the ocean.

EFFLUENT-LIMITED SEGMENTS - in Louisiana, any surface water segment that meets and will continue to meet applicable water quality standards, and/or where water quality will meet applicable standards after the application of the effluent limitations required by the Clean Water Act.

ENVIRONMENTALLY-SENSITIVE AREAS - those areas which contain natural or cultural resources of value and are easily degraded by man's activities, such as wetlands, floodplains, prime agricultural lands, habitats of rare and endangered species, historic and archaeological sites.

EUTROPHICATION - the progressive enrichment of surface waters (particularly non-flowing bodies) with dissolved nutrients such as phosphorus and nitrogen compounds, which accelerates the growth of algae and higher forms of plant life.

EXTENDED AERATION - a method of treating sewage involving 24 hours of mechanical aeration in a tank to introduce oxygen and support aerobic bacteria feeding on the organic matter in the sewage. In the subsequent settling stage, the mass of bacteria drop out to form a sludge. A portion of this "activated sludge" is recycled for treatment of fresh sewage.

FAUNA - the animal life in a region.

FECAL COLIFORMS - bacteria normally present in the intestine and feces of mammals, including man. A fecal coliform count is often used as an indicator of pollution. Although the coliform bacteria apparently do not cause disease, their presence in water suggests that disease-causing organisms (pathogens) may also be present.

FLOODPLAIN - area adjacent to rivers and streams and subject to periodic inundation. A 100-year floodplain is an area subject to a one per cent or greater chance of flooding in any given year. A 500-year floodplain is an area subject to a 0.2 per cent or greater chance of flooding in any given year.

FLORA - the plant life in a region.

FORCE MAIN - a pipe or conduit used to convey a liquid (under pressure) against the force of gravity.

FRESH MARSH - characterized by salinities of less than 5 ppt.

GRAVITY SYSTEM - a system of conduits (opened or closed) in which no liquid pumping is required.

GRIT - the heavier mineral matter, such as sand, gravel, etc., in water or sewage.

GROUNDWATER - subsurface water that completely fills (saturates) all available space within an aquifer and below the top of the zone of saturation.

HABITAT - the natural environment of a plant or animal.

INFILTRATION - water entering a sewer system from the ground through such means as defective pipe, joints, connections or manhole walls.

INFILTRATION/INFLOW (I/I) - the total quantity of water from both infiltration and inflow without distinguishing the source.

INFLOW - the water discharged into a sewer system from such sources as roof leaders, cellars, yard and area drains, along with storm sewers, stormwater, surface runoff or drainage.

INFLUENT - raw or partially treated wastewater flowing into a sewage treatment plant.

INTERCEPTOR SEWER - also called "trunk" lines, usually at least 12 inches in diameter and which carry wastewater from collector sewers to the treatment plant.

INTERDISTRIBUTARY - sediments deposited in low areas between the distributaries of present and past deltas.

INTERMEDIATE MARSH - characterized by salinities of 5 to 10 ppt.

INTRADELTA - the deposits associated with delta advance.

LAND TREATMENT - (also known as Land Application Wastewater Treatment) an alternative treatment procedure to conventional methods of disposal of effluents into surface water sources. In the planning area, the type of land application considered was "Overland Flow". This is a biological treatment process in which wastewater is applied over the upper reaches of sloped terraces and allowed to flow across a vegetated surface to runoff collection ditches.

LAND SUBSIDENCE - the lowering of the natural land surface in response to earth movements, lowering of fluid pressure, removal of underlying supporting material by extraction or solution of solids, either artificially or from natural causes.

LEACHATE - liquid containing decomposed wastes, bacteria and other materials that drain out of landfills.

MARSH - low-lying, soft wetland, commonly covered (sometimes seasonally) entirely or partially with water; dominated by grasses or grasslike vegetation.

MARSH APPLICATION - (see Aquatic Treatment) aquatic treatment of municipal wastewater utilizing marshes.

MILLION GALLONS PER DAY (mgd) - a unit of measurement for expressing the flow rage of sewage treated at a plant.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) - the National permitting system authorized under Section 402 of the Clean Water Act, including any state or interstate program which has been approved by the Administrator, in whole or in part, pursuant to Section 402.

NATURAL LEVEE - slightly elevated areas that flank alluvial streams and form conspicuous highs on the otherwise featureless deltaic plain.

NON-POINT SOURCE - a pollution source that cannot be specifically located (an areawide or diffuse source of pollution).

NUTRIENT - an element or compound required by an organism for growth and/or sustenance. When referring to water quality, nutrient commonly means phosphorus and nitrogen.

ORGANISM - any living or recently dead thing.

OXIDATION LAGOON - shallow pond for the prolonged detention of sewage. Natural (as opposed to mechanically induced) contact with air is designed to support aerobic microorganisms which digest sewage.

PERMEABILITY - the ability of a rock or other earth material to transmit fluids.

pH - a measure of hydrogen-ion activity in solution. It is expressed on a scale of 0 (highly acidic) to 14 (highly basic). pH 7.0 is a neutral solution, neither acidic nor basic.

PHYTOPLANKTON - floating plants, mostly microscopic forms.

PLANNING AREA - for this EIS, encompasses all of the West Bank of Jefferson Parish except the incorporated cities of Gretna and Westwego, Grand Isle and contiguous areas.

PNEUMATIC - moved or worked by air pressure.

POINT BAR - deposits formed by the lateral migration of the river or its distributaries.

POINT SOURCE - with reference to air or water pollution, a source of pollution from a well-defined location (such as an incinerator or sewage outfall).

POLLUTANT - a residue (usually of human activity) which has an undesireable effect upon the environment (particularly of concern when in excess of the natural capacity of the environment to render it innocuous).

PRIMARY TREATMENT - the first stage of wastewater treatment; removal of floating debris and solids by screening and sedimentation.

PRIME AGRICULTURAL LAND - land that has the best combination of physical and chemical characteristics for producing crops (as defined by the Soil Conservation Service).

PRODELTA - deposits that are the first terrigenous sediments introduced into a depositional area by an advancing delta.

RETURN FLOW - the amount of diversion water not consumed, but returned back to the stream (also called discharge).

SALINE (SALT) MARSH - characterized by salinities greater than 20 ppt.

SALINITY - the concentration of salt in water.

SALTWATER INTRUSION - the contamination of surface water (streams, lakes, marshes, etc.) as a consequence of upstream movement of coastal saltwater from the Gulf of Mexico.

SECONDARY IMPACTS - the indirect or induced changes in population growth or land use and the environmental effects resulting from these changes.

SECONDARY TREATMENT - a treatment level meeting effluent limitations for BOD and TSS of 30 mg/l (each) on a maximum monthly average basis.

Secondary treatment removes virtually all floating and settleable solids and results in approximately 85 per cent reduction of BOD and TSS.

SEPTIC WASTEWATER - wastewater in which material is undergoing decomposition under anaerobic conditions.

SERVICE AREA - the land area tributary to, or served by, a centralized sewer system.

SERVICE LINE - in a sewer system, the line connecting a house or building to a collector sewer.

SETTLEABLE SOLIDS - the matter in wastewater that will not stay in suspension during a pre-selected settling period, such as one hour, but either settles to the bottom or floats to the top.

SEWAGE - a combination of liquid and water-carried wastes from residences, commercial buildings, industrial plants and/or institutions; wastewater.

SEWER SYSTEM EVALUATION SURVEY (SSES) - an evaluation program designed to show if a sewer system discharging into a treatment plant is subject to excessive infiltration/inflow.

SEWERAGE SYSTEM - a comprehensive term for facilities for collecting, pumping and treating sewage.

SLUDGE - the accumulated settled solids from sewage or industrial wastes, raw or treated, in a semi-liquid state.

SWAMP - a flat, wet area usually or periodically covered by standing water and supporting a growth of trees, shrubs and grasses.

TERTIARY TREATMENT - see Advanced Wastewater Treatment.

TOTAL OXYGEN DEMAND - the amount of oxygen required for the stabilization of organic and inorganic substances.

TOTAL SUSPENDED SOLIDS (TSS) - the sum of the solids which either float on the surface or are in suspension in water, wastewater, or other liquids, and which are largely removable by laboratory filtering, usually stated in milligrams per liter.

TRUNK SEWER - a sewer line which receives many tributary branches and serves a large territory.

TURBIDITY - the occurrence of suspended and colloidal materials in water which disturbs clarity and diminishes the penetration of light.

VACANT DEVELOPABLE LAND - vacant land which can support growth in a manner which will not encroach on environmentally sensitive areas.

WASTELOAD ALLOCATION - the amount (volume, concentration or total mass) of wastes a wastewater effluent can contain without adversely affecting the water quality in receiving waters.

WASTEWATER - the spent water of a community. A combination of liquid and water-carried wastes from residences, commercial buildings, industrial plants and/or institutions; sewage.

WATERFOWL - birds frequenting water; ordinarily referring to game birds such as ducks and geese.

WATER QUALITY LIMITED - in Louisiana, any surface water segment that does not meet applicable water quality standards, and is not expected to meet applicable standards even after the application of the effluent limitations required by the Clean Water Act.

WATER TABLE - the upper limit of that part of the ground which is saturated with water.

WATERSHED - an entire drainage basin including all living and non-living components of the system.

ZONE - for this wastewater facilities planning project, "zone" represents a division of the planning area based on the locations of existing plants, and jurisdictional and physical barriers (see Figure 5-1).

Table 11-1
METRIC CONVERSION TABLE

Common English units of measurement are used in this report. These units may be converted to metric units by using the conversion factors listed in the following table.

ENGLISH UNIT	EQUIVALENT METRIC UNIT
Length	
1 Inch	2.54 Centimeters (cm)
1 Foot	30.48 Centimeters (cm)
1 Foot	0.3048 Meters (m)
1 Mile	1.6093 Kilometers (km)
Volume	
1 Liquid U.S. Gallon	3.785 Liters (l)
1 Liquid U.S. Gallon	0.003785 Cubic Meters (m^3)
1 Acre-Foot	1233.49 Cubic Meters (m^3)
Weight	
1 Pound	0.453592 Kilograms (kg)
1 Pound	453.5924 Grams (g)
Area	
1 Acre	4046.873 Square Meters (m^2)
1 Acre	0.00404687 Square Kilometers (km^2)
Volumetric Flow	
1 Cubic Foot/Minute	0.02832 Cubic Meters/Minute ($m^3 min$)
1 Part Per Million	1 Milligram Per Liter (mg/l)
1 Million Gallons/Day	3785.434 Cubic Meters Per Day ($m^3 d$)

Temperature

Temperature in degrees Fahrenheit (^{o}F) can be converted to temperature in degrees Centigrade (^{o}C) by using the following formula:

$$^{o}C = {}^{o}F - 32 \times 0.555$$

12. APPENDIX

On motion of Mr. Giardina, seconded by Mr. Lawson, the following resolution was offered:

RESOLUTION NO. 37936

A resolution accepting the draft Memorandum of Agreement recognizing the Parish's position on the Water Line to Lafitte.

BE IT RESOLVED by the Jefferson Parish Council of Jefferson Parish, Louisiana, acting as governing authority of said parish:

SECTION 1. That the draft Memorandum of Agreement recognizing the Parish's position on the Water Line to Lafitte be and is hereby accepted.

The foregoing resolution having been submitted to a vote, the vote thereon was as follows:

YEAS: 6 NAYS: None ABSENT: (1) Broussard

The resolution was declared to be adopted this the 24th day of October, 1979.

THE FOREGOING IS CERTIFIED
TO BE A TRUE AND CORRECT COPY

Dolores H. Gonzales

DOLORES H. GONZALES
PARISH CLERK

Prohibited Service Area

DRAFT

Memorandum of Agreement

The following reflects agreements reached between the United States Environmental Protection Agency (EPA) and the Parish of Jefferson, State of Louisiana (Jefferson Parish) on September 20, 1979 at Washington, D.C., as a means of resolving disputes between them involving (1) the adequacy of Jefferson Parish's Environmental Impact Statement (EIS) on a proposed Marrero-Lafitte waterline (the waterline), (2) the environmental consequences and impacts associated with the waterline and (3) EPA's role (a) in evaluating the impacts of the waterline and (b) in attempting to identify ways of mitigating the impacts.

1. Jefferson Parish agrees to promptly modify its pending application to the U.S. Army Corps of Engineers (Corps) for a permit (the Permit) to extend the waterline across Bayou des Familles to include as part of the application, the following:

(a) Jefferson Parish agrees that it will not provide service from the waterline, without prior approval of the Corps and EPA, such approval to be obtained via a Permit modification, into the geographic areas (hereafter called prohibited service areas) of Jefferson Parish described in subparagraph 1(b) following.

(b) The prohibited service areas are:

(1) That area west of the West Bank Hurricane levee line as proposed by the Corps to Jefferson Parish by letter of September 17, 1979, which runs from the intersection of the West Bank Expressway and Bayou Segnette, then approximately meandering south and east, outside the Westwego Airport, easterly to and along the Millaudon Canal, westerly to a proposed Jefferson Parish pump station, around the Oak Cove subdivision, then southeasterly paralleling (but west of) Louisiana Highway 45, to that highway's intersection with the so-called V-levee, thence along the V-levee southeasterly to a point ___ miles above the point of the V-levee, then southerly to the intracoastal waterway (Bayou Barataria) along the right of way of the Jean Lafitte National Park, all as more specifically described in the September __, 1979 Corps proposal to Jefferson Parish.

(2) That area north and east of a line beginning at the intersection of Bayou des Familles and Bayou Barataria east of Crown Point, then following Bayou des Familles north and west to the right of way of new Highway 45, then north to the V-levee, then east and north around and along the V-levee to the Estelle Pump Station, then east along a canal to Bayou Barataria.

(c) In the event that the hurricane protection levee levee line referred to in subparagraph 1(b)(1) above is, as finally implemented, different from that described herein, Jefferson Parish may seek to have modified, through the permit modification procedure, the prohibited service area defined in subparagraph 1(b)(1) above. It is acknowledged that the specific identification of a right to request such modification on the ground stated is not agreed by EPA to be equivalent to a right to have such request granted.

2. The parties further agree that, in the event of a final disposition (including as a result of any appeal taken) in the ongoing litigation styled Creppel, et al v. U.S. Army Corps of Engineers, et al, No. ___________, now pending in the U.S. District Court for the Eastern District of Louisiana, which Judgment requires (1) the blockage of Bayou des Familles and aux Carpes at or above their intersection with Bayou Barataria and (2) the installation of a pump station at Bayou Barataria, Jefferson Parish may seek modification of the prohibited service area described in subparagraph 1(b)(2) above. It is acknowledged that the specific identification of a right to request such modification on the ground stated is not agreed by EPA to be equivalent to a right to have such request granted.

3. The action previously taken by Jefferson Parish to (1) reduce the size of the waterline (taken in November 1978) and (2) to establish a wetland protection line in the service area below Bayou Barataria to the end of the waterline, are agreed to be part of ongoing efforts to resolve EPA's reservations about the impacts of the waterline. Jefferson Parish reaffirms those actions and the parties acknowledge that they and their implementation as conditions in the Corps of Engineers Permit are part of this agreement.

4. EPA agrees that upon issuance of the Corps of Engineers Permit which embodies the conditions of paragraph 1 of this agreement, EPA will

Memorandum of Agreement (Continued)

advise the Department of HUD that its objections to the project have been resolved.

Effective the date executed by the Regional Administrator of EPA, Region 6.

Jefferson

by

Attest:

EPA

by

Regional Administrator
Region 6

Date 30 NOV 1979

Noted
~~Agreed to and accepted~~ by the U.S. Army Corps of Engineers:

by

THOMAS A. SANDS
Colonel, CE
District Engineer

State of Louisiana

WILLIAM C. HULS
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF FORESTRY
(LOUISIANA FORESTRY COMMISSION)

D.L. McFATTER
ASSISTANT SECRETARY AND
STATE FORESTER

February 29, 1980

Mr. Clinton B. Spotts
Regional EIS Coordinator
EPA, Region 6
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

Reference Jefferson Parish Grant #C-220-592-01-0 for wastewater treatment facilities.

Because of the absence of forested lands within the affected area, we will not have any comments regarding this project.

We do appreciate the opportunity to review the intended proposal.

Sincerely,

Mercer

W. D. MERCER - ASSOCIATE STATE FORESTER

GAR

P.O. BOX 1628 . BATON ROUGE, LA. 70821
5150 FLORIDA BOULEVARD

United States Department of the Interior
NATIONAL PARK SERVICE
SOUTHWEST REGION
P.O. Box 728
Santa Fe, New Mexico 87501

IN REPLY REFER TO:
L7619(SWR)PE

MAR 05 1980

RECEIVED
1980
EPA
REG. VI
S & A DIV.
FED. ASST.

Ms. Adlene Harrison
Regional Administrator VI
U.S. Environmental Protection Agency
1201 Elm Street
First International Building
Dallas, Texas 75270

Dear Ms. Harrison:

Thank you for sending to this office a Notice of Intent to prepare an Environmental Impact Statement on the design and construction of wastewater treatment facilities in Jefferson Parish, Louisiana.

In developing your environmental documentation, we would encourage you to consider both direct and indirect impacts on National Park Service interests in the area. Jean Lafitte National Historical Park (16 U.S.C. 230; Sec. 901 of P.L. 95-625) is within the planning area of the proposed treatment facilities. In addition, pursuant to Section 910 of Public Law 95-625, the National Park Service is preparing a comprehensive report on sites within the Mississippi Delta Region, including Jefferson Parish, which constitute nationally significant examples of natural resources within that region.

Should you or your staff have questions concerning the Historical Park or the significance study, please feel free to contact Superintendent James L. Isenogle, Jean Lafitte National Historical Park, 400 Royal Street, Room 200, New Orleans, Louisiana 70130, or telephone (504) 589-3882, or FTS 682-3882.

Again, thank you for providing an opportunity for the National Park Service to be involved in the scoping process. These comments, of course, do not constitute the National Park Service's or the Department of Interior's review of and comments on the draft or final environmental statements.

Sincerely yours,

Robert

for L. Lorraine Mintzmyer,
Regional Director,
Southwest Region

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
200 EAST PASCAGOULA STREET, SUITE 300
JACKSON, MISSISSIPPI 39201

September 2, 1980

RECEIVED
SEP 05 1980
EPA
REGION VI
[illegible]

Mr. Clinton B. Spotts
Regional EIS Coordinator
(6ASAF)
U. S. Environmental Protection
Agency
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

This is in response to your letter of August 5, 1980, requesting a list of endangered, threatened, or proposed species that may occur in the area of the proposed wastewater treatment facilities for Jefferson Parish (West Bank), Louisiana (Log number 4-3-80-I-200).

The following species could be expected within the project area.

> Bald eagle (Haliaeetus leucocephalus): Significant eagle habitat is found between Lafitte and Little Lake and along the west shoreline of Lake Cataouatche.
>
> Brown pelican (Pelecanus occidentalis): Active nesting colonies occur in the southern end of Barateria Bay on Queen Bess Island. Pelicans can also be anticipated feeding and loafing along the coast within the project area.

There are no known proposed species or Critical Habitat within the project area.

If you determine this to be a construction project, Section 7(c) of the Endangered Species Act, as amended, requires that you prepare a biological assessment identifying any listed species, species proposed to be listed, and Critical Habitat which may be affected by the proposed project, and should determine the nature and extent of impact that the project may have on such species. Section 7(c) also stipulates that the biological assessment shall be completed within 180 days after the date on which initiated and before any contract for construction is entered into and before construction is begun. The assessment should include, as a minimum:

1) an on-site inspection of the area;
2) interviews with recognized experts on the species at issue;
3) a review of literature and other pertinent scientific data;
4) an analysis of the effects of the proposal on the species;

5) a review of alternative actions that may provide conservation measures.

If you determine this action not to be a construction project, a biological assessment is not required, however, you still have an obligation to review the activity to determine if it may affect listed species or Critical Habitat and to initiate formal consultation pursuant to Section 7(a), if you find that such an affect may occur.

The term construction projects is defined to include only those construction activities that are major Federal actions significantly affecting the quality of the human environment. These are actions for which environmental impact statements are normally required.

For additional information regarding your obligations under the Endangered Species Act, contact Mr. Ernest Douglas, Endangered Species Specialist, U. S. Fish and Wildlife Service, 200 East Pascagoula Street, Suite 300, Jackson, Mississippi 39201, telephone FTS 490-4900, commercial (601) 960-4900.

We appreciate your concern for endangered species.

Sincerely,

Dennis B. Jordan

Acting for Gary L. Hickman
Area Manager

cc: RD, FWS, Atlanta, GA. (AFA/SE)
ES, FWS, Lafayette, LA.
Director, Department of Wildlife
and Fisheries, New Orleans, LA.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
200 EAST PASCAGOULA STREET, SUITE 300
JACKSON, MISSISSIPPI 39201

September 5, 1980

Mr. William F. Hoehlein
ESEI
Ecolsciences Environmental Group
Eastern Region: 1 Bank Street
Rockaway, New Jersey 07866

Dear Mr. Hoehlein:

This is in response to your letter of August 1, 1980, requesting a list of Federal and State endangered and threatened species in Jefferson Parish, Louisiana.

At the present time, there is no state list of endangered species for Louisiana.

The Federally protected species that occur in the parish are the endangered brown pelican (Pelecanus occidentalis) and bald eagle (Haliaeetus leucocephalus). The endangered Arctic peregrine falcon (Falco peregrinus tundrius) is a transient species that may occur occasionally along the barrier islands on the coast.

Please advise if we may be of additional assistance.

Sincerely,

Dennis B. Jordan

Dennis B. Jordan
Area Endangered Species Supervisor

cc: RD, FWS, Atlanta, GA. (AFA/SE)

EcolSciences, Inc.
RECEIVED
SEP 8 1980
Rockaway, New Jersey 07866

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT. CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS. LOUISIANA 70160

LMNOD-SA

29 April 1981

Ms. Sharon K. Forman
VTN Louisiana, Inc.
2701 Independence Street
Metairie, Louisiana 70002

Dear Ms. Forman:

Reference is made to your letter dated 19 March 1981 requesting a wetland determination for 14 alternative locations for a proposed 201 treatment plant site.

Based upon interpretation of color infrared aerial photographs, it has been determined that the proposed sites are all located in nonwetland areas and do not require Department of the Army permits for the deposition of dredged and/or fill material.

If you require further information, you should contact Mr. Michael Skougard at (504) 838-2259.

Sincerely,

Michael G. Skougard
for C. W. DECKER
Chief, Regulatory Functions Branch
Operations Division

Note: These 14 alternative sites included (by name): Gretna Boulevard, Timberlane, Cousins North, Cousins South, Cousins West, West Marrero, Westwego, Celotex, LP&L Northwest, LP&L Northeast, LP&L Southwest, LP&L Southeast, U.S. 90, Bridge City (existing plant site).

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS, LOUISIANA 70160

LMNOD-SA

25 June 1981

Ms. Sharon K. Forman
VTN Louisiana, Inc.
2701 Independence Street
Metairie, Louisiana 70002

Dear Ms. Forman:

Reference is made to your 10 June 1981 request for wetland determinations for proposed alternative sites for the Westbank Jefferson Parish 201 project.

Based upon previous onsite inspections the "Timberlane" site has been determined to be a nonwetland and the Hero Cut-off site a wetland. The "Churchill Farms" site may have areas classified as wetlands. The southwestern quarter of the "Kelvin Tract" has been determined to be nonwetland by Environmental Protection Agency (EPA). The remainder of the "Kelvin Tract" has been determined to be wetland by EPA.

If you have further questions regarding this matter you should contact Mr. Michael Skougard at (504) 838-2259.

Sincerely,

Ronald J. Ventola

RONALD J. VENTOLA
Acting Chief, Regulatory Functions Branch
Operations Division

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